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THE
NATURE AND TREATMENT
OF
GOUT.

BY
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PHYSICIAN TO THE BUXTON BATH CHARITY.

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PREFACE.

IT is now many years since an extensive work on the exclusive subject of Gout has been published ; and the great advances in chemistry and its collateral sciences might alone have justified the laying before the profession a new work on a disease, so intimately connected with a humoral—it may, perhaps, hereafter be written, a chemical—pathology, as gout will probably at length, on all hands, be admitted to be. But my residence at Buxton, the thermal waters of which place have so long been famous in cases of gout and rheumatism, has afforded me large opportunities of observing and treating these diseases ; and the following work claims to be the result of my experience in gout cases. It has been as carefully digested and put together, as circumstances have permitted it to be ; and I lay it before the profession in the hope, that it must contain some useful matter. The diagnosis between gout and rheumatism appears to me, as

will be gathered from the body of the work, to be a question of much practical importance, and a subject that has seemed to be too little attended to. I trust that the time will come, when the so-called disease, rheumatic-gout, will be as seldom heard of, as I believe it to be of rare occurrence,—that definite views of the effects of colchicum on gout and rheumatism, and the consequent importance of forming a just diagnosis between these diseases, may eventually be obtained,—and that strong opinions of the connection between gout and cachexia may be generally held.

If, by a large number of the members of my profession, I should be thought to have made of too great importance, a disease, which has engrossed so much of my time and thoughts,—and of which they themselves may, possibly, have seen but little,—I hope that they will consider it as a necessary consequence of the circumstances in which I have been placed, and which have justified and enabled me to lay this work before them.

W. H. R.

THE SQUARE, BUXTON.

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THE
NATURE AND TREATMENT OF GOUT.

CHAPTER I.

INTRODUCTORY.

THE relative importance of a disease depends on the number of persons affected by it, on the degree of suffering it involves, on the greater or less probability of its cure, and on its direct or indirect effect upon the duration of life. It will admit of little dispute, that the class of persons chiefly attacked by it,—the greater or less importance of their position and their labours in the social system,—will have some weight in determining the degree of importance to be attached to a disease.

The number of persons who suffer from gout in this great country is known to be large, and is perhaps much larger than is commonly supposed; the amount of suffering occasioned by it is very great; the liability to its recurrence, and the amount of its injury to the system, increase with every attack; this liability, although it may probably be

lessened in most cases, can seldom be removed ; and it takes largely from the expectation of life. It is chiefly the highest ranks of life, and the most thinking classes of the community, that are attacked by this disease ; the liability to its influence does not extend to the masses of the people ; but it is, with few exceptions, confined to those who have raised themselves, or been raised by the exertions of their fathers, above the level of their fellows. The higher the rank, the more pure and noble the blood, the greater the powers of mind, and the more those powers are used, the nearer the man is to the time of life when his intellect is the most vigorous, the more liable is he to become the victim of this disease. Gout cannot be justly regarded as a mere tax upon luxury, or a mere atonement for indolence. The liability to gout does not cease with the immediate sufferers, but is transmitted to their posterity.

Gout is produced by such a degree of interference with what have been well called the organic laws, as diverts the amount of nervous influence, which is necessary to the due performance of the functions of the capillaries, to other—it may or may not be nobler and higher—uses ; thus interfering with the free conversion of arterial into venous blood, impeding the rapid deposition of new materials and the equally rapid removal of the old, giving time for chemical changes in the contents of the capillaries, and for the formation of crystallisable materials, the irritation of which is probably the immediate

cause of gout and its consequences. Whatever has the effect of interfering with the communication of the salutary and needful influence of the nervous system to certain capillary vessels may be a remote cause of gout.

Gout cannot, under any circumstances, be looked upon as an unimportant malady, nor as affording to the system a desirable and useful exit for crude and noxious matters, and thereby saving it from more serious and life-endangering diseases. It is a disease *sui generis*, and for which the seeds must be sown a long time before it can show itself; which other diseases cannot produce, although they may excite or aggravate one of its paroxysms.

Gout is a disease which occurs in paroxysms; which, when not modified, are sometimes distinctly marked; the duration and course of which are definite, several of them constituting an attack or fit of the disease, having an interval of longer or shorter time between the fits, but leaving a greater liability to its recurrence, and at shorter intervals, after every succeeding fit.

Other diseases may excite, but they cannot produce, gout; which is not a secondary affection arising from some other morbid condition, but a primary disease, having its peculiar predisposing and proximate causes, which other diseases can only excite or aggravate, and with which they may have no connection whatever. Therefore, when gout supervenes upon other ailments, they are not to be regarded as having produced it, although

they may have acted as its exciting cause; nor when those ailments have been greatly relieved, or perhaps entirely removed, on the supervention of gout, is the gouty paroxysm to be looked upon as their result, but as having influenced them by diverting the determination of blood from the organs previously affected, and in the same proportion relieved their morbid state.

It is generally unwise, and sometimes unsafe, to check the development of a gouty paroxysm. In this respect, gout resembles the exanthematous, and some other diseases. This is no proof that gout is a desirable result of morbid action, but that the system, having become gradually and increasingly deranged, can only be relieved by a paroxysm of the disease, or by disease of some central and vital organ; this being the usual consequence, and always the risk to be incurred, when a paroxysm of gout is checked, or its development interfered with; a risk which ought only to be incurred under peculiar circumstances, and then to be prepared for and lessened, as far as may be, by all the means that medicine affords.

Although the occurrence of the gouty paroxysm often relieves, or removes, previously existing derangements, it does not lessen their liability to return. Gout is not, as was once supposed, a direct means of diminishing the tendency to other diseases. On the contrary, by disturbing the equilibrium of the circulation, diminishing the tone of the capillaries, deranging the nervous system, and interfering with

or impairing its influence on the secreting and excreting organs, gout becomes an important agent in increasing the morbid tendencies of the system, aiding other causes of disease, and lessening the probabilities of life. The immediate relief afforded to deranged states of organs, by a paroxysm of gout, must not be confounded with its ultimate consequences. Gout can only remove or diminish pre-existing derangements, by its derivating or evacuating action; and there could hardly be a more uncertain and severe counter-irritant, or a more hazardous evacuant, than a fit of gout.

The seat of gout, and probably the only structure that is ever affected by it, is the white fibrous tissue. Why the capillaries that permeate this tissue, should be so exclusively liable to this disease, can only be a subject of conjecture. It may be owing to the density and firmness of this tissue, and its comparatively little power of accommodating itself to any sudden or great increase of size of the parts it envelopes, or of the vessels that permeate it. The parts of this tissue that are the most distant from the heart, the most dependent, the most exposed to the effects of cold and wet, are those which are the most subject to this disease. Gout, almost always, first attacks the feet; and, next to the feet, the hands are most liable to suffer from the disease; the fibrous tissue of the articulations being the seat of the attack. Perhaps the pressure to which the feet are subjected in the act of walking, and the still further pressure of the boot or shoe, increase

their liability to gout; and this may be the reason why the second joint of the great toe, as being more peculiarly pressed upon in walking, is the part usually first affected by the disease. Next to the smaller joints of the toes and fingers, the larger joints, and especially those that are distant from the trunk of the body, least protected by their own coverings or by clothing, and that have the most freedom of motion are those, *cæteris paribus*, that seem most subject to be the seats of gout. There is, however, no joint that is not liable to suffer from this disease. The articulations of the vertebræ are occasionally the seats of gout. It is, however, a general rule, with few exceptions, that the nearer a part is to the trunk of the body, and the farther from the surface, the less frequently is it found to be attacked by gout. It is only in cases of long standing, and extreme aggravation; or when, from neglect, or ignorance, or peculiarity of constitution, the development of the disease in other parts has been interfered with, that the more deeply seated or the more central parts are involved in the disease; or that those parts of the fibrous tissue which are not attached to joints, and consequently not subjected to much motion, suffer from gout. But, under such circumstances, there is perhaps no part of the fibrous tissue that may not become the seat of gout; and it may attack the periosteal covering of any of the bones, the sheaths of the arteries or the nerves, or even the *dura mater*.

Gout is a disease of inflammatory character, the

degree of inflammation varying from the slightest to the greatest amount of increased action. Gouty inflammation is of specific character, differing from common inflammation in its course and its effects.

These preliminary observations have seemed to be necessary to the account to be given of this disease; and the further consideration of it is divided into the separate heads of 1st. the remote causes, and the predisposing cause, 2nd. the exciting causes, 3rd. the nature of gout, 4th. the treatment of the paroxysms of the disease, 5th. the treatment after a paroxysm, and during the intervals between the paroxysms, and 6th. the means we possess of preventing altogether the access of the disease; premising, that it has been found difficult, and sometimes impossible, to keep these different subjects distinct from one another, and to avoid discussing questions connected with one division of the subject under another part of it; and that it has sometimes been found impossible to avoid repetitions, and indeed that in some instances repetitions have been purposely indulged in, either to preserve the continuity of the several chapters, or to impress matters that seemed to be of especial importance.

CHAPTER II.

REMOTE CAUSES AND PREDISPOSING CAUSE OF GOUT.

HEREDITARY influence is the principal remote cause of gout. There are probably few medical men of the present day, who have had the means of forming an opinion on this question from a large number of gout cases, who entertain a doubt of the very great power of hereditary influence in the production of this disease. The cases are comparatively few in which this is not found to be among the remote causes of the disease; and the responsibility incurred by those, in whom gout occurs without the aid of hereditary influence, must be great, in the same proportion. To estimate this fully, it must be remembered, how difficult or impossible it is frequently found to be to ascertain the diseases of the parents, and still more so those of the grand-parents, of our patients; and on the other hand, that the constitution of the other parent, which must often be such as would be calculated to modify greatly any morbid influences derivable from either parent, seems to be so little effectual in the case of this disease. In some few cases, all the

children of a family are found to suffer from gout, even when traceable to one parent only; but this is not common, and is rarely found to be the case, unless the ravages of the disease have been considerable in the existing and previous generations. It generally happens—but this rule has many exceptions—that the children who most resemble the gouty parent are the most liable to suffer from the disease; or, the attending circumstances being alike, have the disease earlier in life, and to a greater degree. Females are more likely to escape than males, or not to be attacked till later in life, and then in a greatly modified form. The exceptions to this are generally cases in which the disease is complicated with hysteria, and very much modified by such complication. When we see physical characters handed down from generation to generation; when we see features, expression of countenance, complexion, voice, capacity of chest, breadth of shoulders, gait, and gestures, thus transmitted from parents to children; when it is contended, and with much probability, that the child of parents accustomed to the luxurious indulgences of civilised life, cannot be kept in health upon the same amount or quality of food, as will afford adequate nourishment to the children of the poor; it cannot be thought to be singular, although it must be allowed to be inexplicable, that a disease so strictly constitutional as gout, and for the manifestation of which a predisponent cause must have been long in operation, should have hereditary influence as one of the

most important of its remote causes. There is a common opinion, that the alternate generations of families liable to gout very frequently escape an attack of the disease. That one or even two generations of such families do sometimes remain free from gout, is certainly true; and that this immunity does not necessarily exhaust the hereditary influence, although it must greatly diminish its degree, appears to be true; but that the grandchildren of gouty people are more likely to be gouty than their children, supposing the children to continue free from the disease, is unquestionably one of the many vulgar errors.

Sedentary habits are among the most influential of the remote causes of gout, and, in a very large proportion of cases, are found to have played an important part in producing the habit of body in which gout originates. By sedentary habits is to be understood, not simply the sitting during the greater part of a man's waking hours, but the doing so without interruption during many consecutive hours, and without reference to the digestive functions, and the condition of the nervous system. A man may sit during the same number of hours daily, with much less risk, if he acts up to the knowledge, that he should not do so during the latter stages of digestion, nor continue to do so when the powers of the nervous system are becoming exhausted, whether from the want of food, or of sleep, or of muscular exercise. To avoid the risk of suffering from sedentary habits, or to

diminish the risk as much as possible, it seems only necessary that the sittings should not be long continued at any given time, but should be interrupted, at as short intervals as may be, by muscular exercise, which should be varied, to avoid sameness, and to call into exercise the greatest number of muscles ; that the sittings should not be needlessly protracted beyond the third hour after any meal, that a longer interval than five waking hours between the meals should be avoided, and that the first intimation that the system requires the refreshment of sleep should be attended to. Every observer well knows how little these particulars are attended to by sedentary people, and more particularly when such habits have been acquired by yielding to a fondness for mental occupations. But, whether sedentary habits have been thus acquired, or result from needful attention to the duties of life, or from indolence, these habits are powerful among the remote causes of gout, and powerful in proportion to the degree in which they are indulged, and as they are regulated or not.

That sedentary habits should be thus powerful as a remote cause of gout, admits of easy explanation. Whatever interferes with the action of the capillaries upon the blood, whether it consists in depriving them of a proportion of the nervous power which is necessary to that action, or in a degree of interference with the passage of blood through them, or in depriving them of occasional but important mechanical assistance, any such agent may

be a remote cause of gout. The effects of muscular exercise in assisting the passage of blood through the superficial veins, in accelerating the return of the blood to the heart, in stimulating the heart to quicker and fuller action, in exciting the general circulation, in circulating the blood more rapidly through the lungs, in adding to the amount of the changes produced on the blood by the respiration, in increasing the action of the cutaneous exhalants, thereby acting indirectly as an evacuant,* are well known, and may be justly regarded as among the necessities of man's nature. To deprive the system of the influence of so powerful an agent, must be to risk its derangement. Although seldom, and perhaps never, sufficiently powerful if acting alone, to induce the habit of body which constitutes the predisposing cause of gout, by adding to the effect of other agents, the influence of sedentary habits in confirming gouty tendency must be admitted to be great.

Undue exercise of mind is usually allied to the last-mentioned of the remote causes of gout. It often contributes greatly to the production of the gouty habit. This is evidently owing to the

* If the hypothesis of Dr. Willis be correct, that the great use of perspiration is to render venous blood thicker than arterial blood, by depriving the latter of a portion of water as it passes through the capillaries, for the purpose of calling the wonderful principle of endosmosis into operation, which he conceives to be of great importance in promoting the absorption (passage ?) of the blood from the arteries into the veins, the importance of muscular exercise to our physical welfare will be still further demonstrated.

expenditure on the mental operations of a greater or less proportion of the nervous energy, which is necessary to the adequate and natural performance of the several organic functions, rendering the action of the capillaries more sluggish, and causing the chemical changes that take place in those vessels, which changes are necessarily the effect of vital action, to be less perfectly or less regularly effected than is consistent with health.

It might be, that every man's system is capable of producing a certain amount of nervous power,—that amount varying in different individuals, and, no doubt, varying in the same individual at different times, and under different circumstances,—that amount being at any given time essentially definite and limited; and it might be, that this power could be used indiscriminately for the very different purposes of ministering to mental acts, or the bodily functions, or any of the physical requirements of the system. But, whether this be so or not, it is quite certain that the more a man uses his mind beyond a certain point, the less actively are his bodily functions performed; and if this, which must be called excessive, use of the mind's powers be continued, the bodily functions, from being performed sluggishly, come to be performed imperfectly, and, in fact, arrive at the point where health passes into disease. But, further, it might be, that, to expend the nervous power in any one way excessively, not only abstracts so much from the other

modes in which this power was intended to be expended, but is attended with a real loss of a part of the nervous influence; for it is quite certain, that by alternating one way of expending this power with another, by using it at one time in mental processes, at another in the functional offices of the body, as movement of the voluntary muscles, and then recurring to mental exercises, a larger amount of nervous energy may be manifested, and that too without injury, than can otherwise be displayed even at the expense of the body's well-being. This is probably tantamount to alternating exercise of the arms with that of the legs, or of one arm with that of the other, or of the muscles principally used in the act of walking with those used in the act of riding, by which a greater amount of power may be expended with less fatigue. It is now well known, that different parts of the nervous system have different offices assigned to them: that to one part is assigned the intellectual, to another the motor, to another the sentient, to another the respiratory, powers; and it is evident, that these are so far independent of one another, as to be able to perform their offices without robbing the other parts of their powers. What is contended for is, that to use any of them unduly is to debilitate and interfere with the action of the other parts, in the same way as a man may produce the sense of fatigue in all his muscles by using some of them too much; and, further, that by using all of these powers duly, every one of them becomes capable of—more and

more—appearing to aid and strengthen one another mutually.*

In ignorance of these truths, or more probably in their despite, for they are truths which can hardly have failed to present themselves to the mind of any one, the temptation of letting the series of thoughts continue uninterruptedly for many successive hours, the feeling that it may be difficult to take up the chain at the same point again, and to go on adding new links to it with equal facility, and, more than all, the proneness to indulge inclination at the expense of judgment, are yielded to, and come to be less and less easily resisted, until the indulgence becomes habit, and the intellectual debauchee is perhaps only awakened to the magnitude of his error by seriously-impaired health.

There can be no doubt, that, for the accomplishment of the important changes which the blood undergoes in the capillaries—changes perhaps essentially chemical, but which are nevertheless effected under the influence of the nervous and vital power, and by its means—a large amount of nervous power must be required and expended; and if an excessive

* This is a strong argument in favour of general education, and the systematic training of the masses of the people to habits of thinking, and giving them as far as may be a taste for exercising the mind in the fields of science and literature, on the principle of adding to their chances of health and longevity, as well as that of strengthening the probability of their being good citizens and useful members of society. There are few results of statistics so interesting as the finding the expectation of life to be so largely increased by education and habits of thought, and this, notwithstanding the injury to the bodily health that attends the undue use of mind.

amount of this power be so expended in any one way, whether in mental acts or otherwise, this must be at the expense of the other parts of the economy, and the functions of those parts must be inadequately performed in the same degree. But, in such a case, it is seldom that this occurs equally in all the other parts of the system. On the contrary, some one part or organ almost always suffers more than any of the others, and perhaps suffers exclusively. Further, the effect is not, in most cases, manifested until after this unfair distribution of nervous power has been in operation a considerable length of time.

Perhaps, strictly speaking, when the organic laws are thus disobeyed in the first instance, an immediate penalty is generally levied and enforced. A man of temperate habits cannot commit a debauch of wine, a man who has been used to a moderate diet cannot partake to excess of the luxuries of the table, a man of regular life cannot enter into dissipation, without immediate warning that he is warring against the physical necessities of his system, and doing wrong to his body's well-being. His digestive organs will probably give signs of disordered action, his activity of mind will probably be diminished, and that equanimity be disturbed which is so closely connected with a healthy body. But, if such warning be neglected, and neglected notwithstanding its frequent repetition, such repetition occurring at first at short, but at gradually lengthening, intervals, at length ceases; and the individual may appear to have become habituated to the unnatural circumstances.

. And if, in such an extreme case as that now supposed, this gradual apparent usage of a system to such irregularities always happens in systems that possess an average amount of original power, it is necessarily still more the case, when the irregularities are less considerable, and perhaps confined to an undue devotion to sedentary pursuits, or the practice of sitting up rather late at night, or the using rather more food, or rather more stimulus, than the wants and waste of the system require. But, in all such cases, the opinion that the system has become reconciled by habit to the irregularity is delusive. Sooner or later, depending much perhaps on the original strength of the constitution, or on the physical education and its consequences—improving or leaving unimproved the original constitution—time, the sure test of right and wrong, shows the extent of the delusion. In many instances, the ultimate manifestation of evil consequences is sudden, and from the accidental operation of an exciting cause: the predisposition has become established, and has ended in the production of disease.

Gluttony and intemperance have always been acknowledged to be important remote causes of gout. The effect on the system, of dietetic errors, irregularities, and excesses, is great and cumulative. The derangement and exhaustion of nervous influence from the amount of vital power demanded for the digestion of an excessive quantity of food, the repletion of the vascular system and the surcharging of the blood with nutritive materials, the additional

demand for nervous influence to vitalise and organise these materials, and finally reduce them to the forms in which they may be expelled from the system, are so many direct causes of disturbing the equilibrium of the nervous and vascular systems, and of inducing or augmenting morbid tendencies. And these effects are cumulative. If children are allowed to eat largely and improperly—to consume excessive quantities of food, and food that is so rich and various in kind as to pamper appetite—the effect on the moral and physical nature, on the habits of the after-life, on the constitution and health of the adult and the advanced life, is great and increasing. The moral influence must be bad, and the physical consequences almost equally so. The states of system which constitute the virtual predisponent causes of many of the diseases of the after-life are unquestionably often induced in these earlier years, and traceable to errors in the physical management of the infancy and early childhood. It is very well known that scrofula is commonly—too commonly—induced or aggravated by scanty food, badly-ventilated rooms, and filthy habits; and it is equally to be relied upon, that other morbid states, more especially of course such as are more or less dependent on, or connected with cachexia, derive their remote causes from errors in the diet and the hygienic management of the young. With especial reference to gout, this is a question of importance. It is believed, that the predisposition to this disease, although so generally manifesting itself in middle life, and so rarely

in early life, may be created in the years of growth ; and that where there is hereditary predisposition, the dietetic and general management of the children may do much towards lessening such predisposition. It is thought that, even in these days, parents are little aware how much the future well-being of their children, as regards the probability of life and health, is thus in their own power—how much may be done to alter and modify existing predispositions, or to check the production of predispositions to diseases that they themselves had not suffered from, nor appeared to be liable to. In the one class of life, where poverty and labour take from the children adequately nutritious food, and good and careful nursing, cleanliness and ventilation are still within the reach of all who know their value, and strive for them ; and though not substitutes for plenty of nourishing and wholesome food, and careful and active tendance, are at least important and influential means of counteracting the bad effects of the want of these ; and, in the other class, where cleanliness, and abundant clothing, and good nursing, and daily taking out into the open air, and airy, well-ventilated nurseries and school-rooms, are not wanting, and are held at their due value, the good effects of these great means of rearing a healthy system are apt to be much counteracted by a habit of gross feeding, cloying and surfeiting the system with rich and appetising viands, impairing the digestive processes, producing in the first instance a state of repletion, then one of digestive irritation and dis-

turbance, then one of impaired chyfication, and in the end one of real atony. It is curious to see, how a neglect of hygienic precautions will produce similar effects on the pampered children of the wealthy, and the neglected children of the poor. But, without supposing the neglect in the one case, or the pampering in the other, to be carried to the extent of inducing any marked and serious disease of the infancy or the childhood, and supposing it to be carried only so far as to produce occasional derangement of the functions, to render the children more liable to suffer from the incidental exciting causes of disease, to cause them to be less strong, of less vigorous and robust constitution, and we arrive at the true *fons et origo mali*, the true origin of a large number of constitutional ailments, the generator of morbid predispositions unknown in the individual families, or the hotbed in which the hereditary predispositions are fostered, and the means by which the bond of inheritance is confirmed and rendered inalienable. How strange, it is often said, is it, that such a man and his children should not be attacked by the disease to which the family had previously been notoriously and greatly liable, or, how singular that the children of another family should have this or that ailment, when it had never been known previously in the family of either parent, the disease being one of those that are universally considered to be hereditary, as far at least as the predisposition to it. It is believed that the mother's want of judgment or of attention, her unwise indulgences or

irrational trust in the management of servants, is often the true cause of all this,—or her good management, and watchful superintendence, its satisfactory explanation. In tracing, then, the predisposing cause of gout through the remote causes of the disease, we must go back to the years of growth, and contend that then, in many cases, the hereditary tendency is confirmed or is diminished; and we are justified in the belief that the tendency may thus be in some cases induced to this, as well as many of the other ailments, from which it may be that the individual seldom suffers during the years of growth, but chiefly or exclusively in adult or perhaps middle life.

The children of the two classes of the people, those who have not the common comforts of life, nor sufficient of what are called its necessities, and those who are blessed with them, have been cited as frequently exemplifying how far, by very different means, very similar conditions of derangement may be engendered; but, when the age of childhood has been passed, supposing a state of atony to be engendered in the children of both classes, when puberty has worked its changes in their systems, and the age of growth ceased, they are exposed to very different modes of life, producing in their turn very different consequences; bodily labour, in the one case, modifying much of those consequences; in the other case, mental labour, neglected exercise, and pampered appetites, exerting their combined and injurious influences. In the

one case, we may still have an atonic system, an individual often ailing, seldom quite well, a frequent sufferer from indigestion, or subject to inflammatory attacks, catarrhs, rheumatism, &c., and probably in the end a victim to disease of the lungs, heart, kidneys, or abdominal viscera; in the other case, we have the atony succeeded, or perhaps accompanied, by a plethoric state, with its congestive tendencies, its peculiar forms of dyspepsia, its nervous derangements, its disturbance of the circulation, and, in the end, as it may happen to be modified, its cerebral, or pulmonary, or cardiac, or hepatic, or arthritic disturbances.

It is on the careful and judicious management of children, during all the years of growth, that much depends, in the diminution or the increase of gouty predisposition. A plain and simple diet, not unduly nutritious, perfect cleanliness of their persons and nurseries, free ventilation, daily exposure to the open air, and judicious clothing, excessive forcing of the intellect being at the same time cautiously avoided, will exercise an extraordinary influence in lessening the probable consequences of morbid predisposition, and will, at all events, do much to diminish whatever morbid tendencies the system may have inherited, and to lessen its liability to suffer from the various remote causes of disease by which it may be surrounded. But when the years of growth have passed, when any undue supply of nutrimentary matters is no longer expended in additions to the various textures, when

the plethoric state is more readily induced, the importance of a regulated diet to those having the gouty predisposition, or who are supposed to have it, becomes more imperative, and, with every year, this becomes more and more so. It cannot be too much urged, that precautions against the predisposition to most diseases, and perhaps especially to gout, must be taken early to be effectual; it may be, that they must be taken early to be safe. The system soon becomes habituated to a certain amount of nourishment, even although that amount be much more than is required for the maintenance of the health and strength, or even more than can be borne by it, beyond a certain time, without inducing morbid action; and to diminish the supply which has for a considerable time been made use of, may depress unadvisably the physical energies, and produce an unwise reduction of the vital powers. It should be borne in mind that this is the case when merely nutrimentary matters are made use of; and that it is as influential, although not so rapidly manifested, as the effect of withdrawing any amount of stimulants that had been habitually used. But, generally speaking, these two questions may be classed together; and the man who eats too much, usually takes a certain amount of stimulant likewise. The stimulant, of course, adds, in more ways than one, to the evil consequence of the undue amount of alimentary matters: it produces its own specific effect upon the system, stimulating it for a time, the stimula-

tion being followed by a proportional amount of exhaustion, while it facilitates the concoction and chylication of the alimentary matters; and while this increase in the amount of certain secretions and excretions for a time is its primary effect, its secondary effect is to diminish the amount of the excretions, and to a greater degree than that to which it had increased them in the first instance; and stimulants accordingly add to plethora, not only by facilitating chylication, but by diminishing excretion.

The depression consequent on lessening the habitually-used quantity of nourishment or stimulant, or both, is the state in which the exciting causes of disease exercise most effect. All the powers of the system being below par, the circulation of the blood being more sluggishly and languidly performed, the secretions and excretions being inefficiently eliminated, the vital tonicity of the vessels being diminished, perhaps the blood itself being more or less deranged, local congestions are produced, the groundwork of morbid action laid, and an exciting cause only needed to produce morbid action. As a matter of course, the older the individual, other things being equal, the less of what may be called vital elasticity does he possess, to enable his system to bear up against, and effectually rally from, the depression, without morbid action; and the stronger the morbid tendency, or the predisposition, the more likely is morbid action to follow the lessening of the customary amount of sustenance or stimulant.

It is, therefore, not to be considered that it is time enough to withdraw an excessive amount of nutriment or stimulant, when it is found to be inducing morbid tendencies ; for the doing this, however cautiously, is the every-day cause of immediate and serious disordered action. It is to be feared, that the acting up to their thorough acquaintance with this great truth, on the part of medical men, has often led to the great mistake, on the part of the public, that a certain quantity of stimulant, and a large proportion of animal food, is necessary to the greater number of the almost sedentary classes of civilised life ; whereas that necessity, while it is admitted, is to be deeply deplored, and is produced by long-continued habits of indulgence and excess. The word excess is perhaps a strong one, when applied to people leading regular lives, and never guilty of what would be called repletion or intemperance, but it is nevertheless correctly used in its literal acceptation.

Care and moderation in the use of food and of stimulants, must then be used from early life, to be effectual in the removal, or the lessening, of gouty predisposition ; and the longer the care and moderation are deferred, the less effectual will they be, and the less safely will they be had recourse to. It has been said, that the children of the luxurious require more nourishment than those of the abstemious ; and to some extent it may be true : but the question is not one of supporting existence on the smallest amount of food compatible with health and

strength, but one of living simply and plainly, avoiding a habit of pampering appetite by variety, or by stimulants, or by seasonings and aromatics; the question is one of being guided in the quantity of food taken by the felt wants of the system, rather than by the palatability of the food.*

* "During a long and extensive professional connection with a large rural district, we never knew an instance of gout among agricultural labourers, who of course form the great mass of the population; gout was not uncommon among tradesmen, but still more frequent in the class of gentlemen and opulent farmers. That the quantity of animal food consumed by agricultural labourers is comparatively very small, must be well known to persons who have lived in the country; and we believe this circumstance has considerable share in procuring for that class their singular exemption from gout. It is nearly established that large consumption of animal food tends to produce the lithic acid diathesis; a condition so often associated with gout, that more than one author has been led to consider these forms of disease as essentially connected. In advancing the opinion that large consumption of animal food is a cause of gout, we are glad to avail ourselves of the support of one of the most distinguished physiologists of our day. Müller, in commenting on Magendie's experiments on food, says, 'These experiments have thrown some light on the causes and mode of treatment of gout and calculous disorders. The subjects of these diseases are generally persons who live well, and eat largely of animal food: most urinary calculi, gravelly deposits, the gouty concretions, and the perspiration of gouty persons, contain abundance of uric acid, a substance into which nitrogen enters in large proportion. By diminishing the proportion of azotised substances in the food, the gout and gravelly deposits may be prevented.' An elderly country practitioner has assured us, that, forty years ago, gout was much more frequent among farmers and tradesmen than at present: he is of opinion, that men in these classes drank more freely then than now; and to this difference he ascribes the greater prevalence of gout at the period referred to. This greater prevalence of gout formerly has been averred to us by so many of credit and observation, that we have no doubt of its reality. Allowing that free drinking was more common in those times, we must also remark the important fact, that vegetables were scarce and dear, and that meat formed a much larger proportion of food than at present. We have before us an account-book bearing date from the middle to the latter end of the last century, and in it we find some interesting entries of the comparative prices of meat and

Insufficient muscular exercise is allowed to be an important cause of the state of system which constitutes the predisposing cause of gout. When it is borne

vegetables. The prices for a long period run as follows :—‘Quarter of a sheep, two shillings ; peck of potatoes, sixpence.’ In the same district, at present, potatoes are often only threepence a peck, whereas mutton is sixpence a pound, and sometimes more. The gentleman who gave us this account-book, and who is now more than seventy years old, informs us that when he was young, no potatoes were kept for winter use, and that the only other sort of garden-stuff used was a coarse kind of kale, the leaves of which were stripped off the stalk, and prepared for the table by plain boiling. This vegetable was tough and unpalatable ; and during four or five winter months the food consisted, almost exclusively, of meat, bread, and flour puddings. The change which extensive cultivation of the potato and diffusion of gardening has wrought in the nature of the food of the population generally, is remarkably great, and well deserves the attention of physicians. (See Scurvy.) Abuse of malt liquors and wine is so commonly associated with the love of good cheer generally, that it is difficult to form a separate estimate of its influence as a cause of gout. This influence is real and probably considerable ; and we are disposed to think that malt liquors tend, even more than wine, to produce a gouty diathesis. Their effects are especially manifest in those examples of gout which occur in the lower classes. There is a body of men employed on the Thames whose occupation it is to raise ballast from the bottom of the river. As this can be done only when the tide is ebbing, their hours of labour are regulated by that circumstance, and vary through every period of night and day. They work under great exposure to inclemencies of weather ; their occupation requires great bodily exertion, occasioning profuse sweating and much exhaustion. In consideration of this, their allowance of liquor is very large ; each man drinks from two to three gallons of porter daily, and generally a considerable quantity of spirit besides. This immoderate consumption of liquors forms the only exception, as far as relates to food, which these men offer to the general habits of the lower classes in London. Gout is remarkably frequent among them ; and although not a numerous body, many of them are every year admitted to the Seamen’s Hospital Ship, affected with that disease. This is a very interesting fact, and seems to show that no amount of bodily exertion is adequate to counteract the influence of such large doses of porter ; the exposure of ballasters to wet and changes of temperature probably favours its operation. These men are almost all derived from the peasantry of Ireland ; they can rarely, therefore, inherit a disposition to gout.”—*From a valuable article on Gout, in the Library of Medicine, by Dr. William Budd.*

in mind, that gout is almost exclusively confined to the less laborious classes of the community, to those whose bread is not earned by the daily sweat of the brow, and that few individuals of these classes take an amount of exercise that can be compared to that undergone daily by the peasant or the labourer, the opinion that inactive habits are an important remote cause of gout is fully accounted for. It has too frequently happened that such a change of circumstances, as has forced the hitherto inactive man, who had become subject to gout, to work for his subsistence, has freed him from any farther visitations of the disease, not to afford some warrant even for the well-known saying, that “the best cure for gout is to live on sixpence a day and earn it.” In the classes that are within the pale of gouty visitations, perhaps the only seeming exceptions to the strictures on the small amount of exercise that is taken, are only more striking examples of what is really required to keep the system in health; we allude to sportsmen, who might be supposed to undergo muscular labour enough. But it must be observable, that their violent and great amount of exercise is only taken at certain periods; that the interval between these periods is long, including the larger part of the year; and it is well known, that exercise, to be useful, must be taken regularly, and that people suffer less who lead almost uninterruptedly sedentary lives, than those whose habits are at one time sedentary, and at another active. It may be said here, that exercise, to be useful in

the prevention of gout, must be taken regularly, and must be much greater than people in general make use of, who are not under the necessity of labouring for their subsistence; and it may be added, that to be as beneficial as possible, it should not be violent, nor carried beyond the confines of fatigue, for it is well known how often a fit of gout makes its appearance, during the state of languor that follows a severe day's sport. It need hardly be said, that these remarks are not intended as an argument against the sports of the field, which must be admitted to be, for the time, salutary and invigorating, but merely to point out the necessity there is for some adequate and active exercise at other times, and that this necessity is increased rather than diminished by them. These remarks apply to all the diseases connected with plethora. The system must be habituated to the exercise it stands in need of, and should have its functions aided by that exercise regularly, in order to render it serviceable, and indeed to prevent it from doing harm. Man's system has evidently been made for a life of more or less regular routine, and the bodily functions are even more under the immediate influence of habit, than is the mind. To stimulate the action of the heart and arteries, and consequently the respiration, and the organs of secretion and excretion, by taking a certain amount of muscular exercise for one or more days, is, so to speak, to give them an expectation of similar assistance in future; and if this assistance be not afforded, the consequence will be a degree of

sluggishness in the discharge of their duties, proportioned to the degree of the stimulus that had been administered to them ; a degree of sluggishness, be it observed, greater than would have existed, had no exercise been previously taken. Hence it happens, that people so generally become indisposed, who are induced, by a pressure of engagements, to confine themselves to their desks for days, or weeks, when their usual habits of life allowed and involved a certain amount of daily exercise ; and that, if they escape this, they continue following their sedentary pursuits, without present sensible inconvenience, for a long time. But, as regards gout, it is the cumulative effect of sedentary or not sufficiently active habits, that is to be deprecated and feared. The functional sluggishness, the slightly deficient secretion and excretion, that such habits necessarily involve, leading to and aiding in the production of the plethoric state, as these must, is what has to be dreaded ; and it is thus that deficiency of exercise acts, in producing the state of system in which gout shows itself.

The taking habitually an undue amount of sleep, more than is required to compensate for every day's wear and tear of nervous power, has unquestionably much effect in contributing to the state constituting the predisposing cause of gout. Excess of sleep diminishes organic sensibility, and by so much lessens the activity of the organs, and interferes with the performance of their functions, and thus materially ministers to the plethoric tendency, by dimin-

ishing the expenditure of the system. The same observation holds good, in a great degree, in respect to sleeping irregularly, at one time too much, and at another too little. It must always be borne in mind, that, as has been mentioned, the organic processes are very much influenced by habit. But, while the taking too much sleep lessens organic sensibility, and so diminishes organic expenditure, and adds to plethoric tendency, the taking too little does not produce an opposite effect, but an effect of the same kind, diminishing as this does the nervous powers, or robbing the various organs of that vital influence, by virtue of which they are made and enabled to fulfil their offices. The man who spends the hours that should be passed in sleep, in the pursuit of pleasure, or amusement, or gain, or knowledge, is probably adding as much to plethoric or congestive tendencies, to whichever of these his system is predisposed, as he who is sluggishly and needlessly wasting his hours in sleep.

The period of the twenty-four hours during which the sleep is taken has likewise some important influence on this matter. It must be admitted and acknowledged that the sleep which is taken during the mid-hours of darkness, is that of which least is required, that which most quickly restores the powers of the nervous system, and that which interferes least with the organic processes. The feeling of refreshment and vigour, which succeeds the sleep taken during those hours, is unquestionably more perfect and entire, and the amount of effort of

which people are capable is probably greater, than after sleep taken at other times. The regularity with which certain prescribed hours are devoted to sleep is likewise a very important matter ; involving as this does the smaller chance of unduly exhausting the nervous energies in the first instance ; or of inducing a deep and torpid sleep, that materially interferes with the organic processes, in the second place ; or, on the other hand, such a stimulation, and consequent irritability, of the nervous system, as interferes with and impairs the sleep, and is followed by exhaustion and organic sluggishness.

The effect of climate upon those predisposed to gout is great, and of much importance. The steadiest climate is that which is, perhaps, the least favourable to the manifestations of this disease ; and one that is of very variable temperature, subjected to great and rapid and frequent changes from cold to heat, and from heat to cold, is probably that which adds most to whatever other remote causes may be in operation. But a variable climate, the mean temperature of which is high, has seemed to be less likely to encourage gouty tendencies, than a climate the mean temperature of which is low. Yet this is very much modified by the greater or less degree of humidity of the air : the more moist the air, the greater seems to be its effect on the gouty manifestations, and *vice versâ*. It may probably be added to this, that the change from cold to warm is more apt to favour gouty tendencies, than the change from warm to cold. These matters will be

more appropriately considered hereafter; it may, however, be added here, in confirmation of the above remarks, that gout shows itself most commonly in the spring and fall of the year, most frequently in damp and variable weather, more commonly in spring than autumn, more often after the breaking up of a frost than before, or immediately after its commencement; that gout is more frequent in flat and low districts, than in elevated or mountain districts; more frequent when the dwelling is situated in the midst of a clayey and heavy soil, from which the water drains off slowly, than when a gravel or limestone stratum allows it to pass off rapidly; and that gout is probably more common in inland, than in maritime districts. However good an effect the air of the coast may have in preventing gouty accessions, or rather in diminishing gouty tendencies, and however powerful its influence in relieving the system from the debility so often consequent on the long continuance of the disease, it is almost always found, that to reside constantly, or the greater part of the year, within the influence of the sea air, when the gouty condition is already formed, adds to it materially, and aggravates its attacks, probably from its direct action as a stimulant. The man who is said to be full of gout, and who is anxious to procrastinate the accession of it, the man having a strong gouty tendency, and necessarily not desirous of adding to that tendency, should generally avoid lingering long within the influence of the air of the coast. When the sea-side

is resorted to at all by the gouty, the period of the stay should be short, even if it be thought desirable, for some reason, to repeat the visit so much the oftener. But before the gouty habit has shown itself, there seems to be good reason for thinking that the stimulating air of the sea-coast diminishes the chance of its development, and that it is of some importance as a preventive of gout. This may serve to explain what might at first appear to be somewhat contradictory, viz.: the advice, that a gouty man should give his family the occasional, and perhaps frequent, benefit of the air of the sea-coast, but that he should rather avoid, or regard distrustfully, the inhaling the sea air himself, unless under the circumstances of having had a fit recently, or of wishing to bring on a fit. Both the selection of that air in the one case, and the avoiding it in the other, may be justifiable, with special reference to this disease; the one being with the view of lessening the predisposition, the other with that of lessening the chance of an accession of the disease, the habit having been already established.

The age at which gout is most apt to show itself varies much, in proportion to the degree in which the other remote causes operate; but, nevertheless, age may have place among the remote causes of the disease; for, generally speaking, the gouty habit is first strongly manifested when the summer of existence is passing away, and life's autumn has barely commenced,—when the vital powers are apt to be redundant, when the activity of the absorbents

and the vascular elasticity have begun to undergo those changes which advancing life involves, when the natural tendency of the system is to expend less, and there is, consequently, the stronger liability to the development, or the increase, of the plethoric habit. Accordingly, unless the other remote causes be strong, it is seldom that gout is manifested before the age of forty; and it is, perhaps, comparatively seldom that gout shows itself, for the first time, after the age of fifty-five. There is, however, hardly any age, to which the possible accession of gout can be limited, in individual cases. We have met with one instance, in which gout was first manifested at the age of ten years; and we have known several, in which it has shown itself before the age of sixteen years. It is, perhaps, true, that those who are thus strongly predisposed to the disease, who have arrived at the age of sixteen without an accession of gout, are less likely to suffer from it during the six or seven subsequent years, than they had been previously. At all events, we have certainly met with fewer instances of the first accession of gout between sixteen and twenty-one years of age, than previously to the sixteenth year. After this, the probability of gouty accession increases, the probability of an attack being greater, *cæteris paribus*, every succeeding year, until the age of forty, or from that to forty-five years, when the liability to gout is probably at the greatest, or, at least, when gout is most frequently for the first time manifested; and, after this, the chance of a

primary gout attack probably gets less and less, no age, however, being beyond that limit at which gout occasionally makes its appearance in the system for the first time.

The sex has, for obvious reasons, much influence on the chances of gout attacks. Women are less liable to gout than men, notwithstanding that their habits of life are usually less active. But, on the other hand, women are less exposed to weather, less liable to commit excesses in eating or drinking, have, generally speaking, fewer of the cares and anxieties of life, are usually of less studious habits, pass their lives more tranquilly, and are less drained by mental toils. Probably owing to more than one or two of these different circumstances, unless influenced by hereditary predisposition, women seldom suffer from gout, and then are comparatively seldom attacked by it until the time when the catamenia cease, when the organic system is apt to become less active, and the habits are usually more and more sedentary. When gout shows itself in young women, it is generally connected with catamenial irregularities. How far the gout attacks are modified by sex, will have to be mentioned afterwards.

What we have long regarded as an important remote cause of gout has been more than once alluded to. There can be little doubt that in this, as in many other diseases, the extent to which the mind has been worked, and the character of its labours, have great influence. It cannot, of course, be said, that gout does not often show itself in the

children of the gouty who are not, and never have been, of studious habits; nor can it be contended, that where no hereditary predisposition exists, and the habits cannot be said to have been studious, but, perhaps, much the reverse, and where the cares and anxieties of life have either never been felt, or have long ceased to be so, gout never manifests itself. It often does show itself under these circumstances, and is fairly ascribable to indolent habits, or undue eating and drinking, or to these remote causes combined. All that is contended for is, that, in a large number of gout cases, an over-tasked, unduly worked, or much harassed mind, has an important share in adding to the gouty tendency, in confirming and aggravating the other predisposing circumstances. In what way, an undue expenditure of the energies of the nervous system in mental processes may act in adding to the gouty predisposition, is readily understood; robbing the system, as this does, of some of the vital power needful for the performance of its organic duties, and diminishing, as this must, the rapidity with which the essential changes which the blood has to undergo in the capillaries are accomplished; and not only so, but, perhaps, interfering with those changes, and causing them to be imperfectly performed, and, possibly, in this way, occasioning mechanical obstructions or chemical irritants in these minute vessels. It has seemed, that purely intellectual labours have had more influence in adding to gouty predisposition, than those in which the

imagination has been partly or chiefly made use of; and it has appeared, that undue use of the intellect has had more to do in predisposing to gout, than anxiety or care; and, should this prove to be correct, it will, perhaps, be a singular exception to what is the case in most other morbid states, which are more influenced by anxiety than by excessive thought.

From what has been said of the predisposing circumstances, which add to or produce the tendency to gout, many practical deductions may be drawn. It is here that the hope of really influencing gout to a great extent must chiefly rest. It embraces many considerations which the gouty should weigh well, and impress urgently and anxiously on the minds of their children. To cure gout, when it has been decidedly manifested, may be beyond our means, however much it may be in our power to do in relieving and mitigating the accessions, and in lessening their frequency; but to lessen the chance of its ever being manifested is largely in our power, by dietetic and hygienic precautions, and by keeping the organic functions in a state of activity, and causing a large expenditure of the system's superfluities by means of efficient and regular muscular exercise. From the account of the remote causes of the gouty diathesis it will have been gathered, that it is by inducing or adding to a plethoric habit, that they produce this diathesis, and that plethora is probably the predisposing cause of gout. It should be remembered, that plethora is not confined to those cases

in which much is added to the fluids and solids of the system, but includes those cases in which less of the solids and fluids is expended than is received; and that consequently a man of spare habit, who is abstemious and temperate, may, by taking too little or too much sleep, or by sleeping at irregular periods and at variable times, or by long-continued sedentary habits, or by taking exercise at irregular periods and in varying amount, or by using his mind unduly, produce in his system the same result, as the bon vivant and intemperate arrive at by an opposite route. This explains the apparent anomaly of people so different as the sedentary, spare, pale-faced student, and the bloated and unctuous high and full feeder, and the gross, and rubicund, and pimple-faced sot, should so often be victimised by the different diseases to which plethora lays the train; and it serves to give intelligibility, correctness, and simplicity to the various means advised for the prevention of gout. Thus, we know, that whatever increases the action of the various emunctories of the system, of the lungs, skin, kidneys, liver, and bowels, diminishes the fullness of the capillary vessels, enables the changes which the blood undergoes in them to be more rapidly and completely performed, and by so much prevents or diminishes plethora; and, on the other hand, we know, that whatever diminishes the action of the various secreting and excreting organs, adds to the fullness of the capillary vessels, interferes with the changes that the blood undergoes in them, and renders them

less quickly performed. To the one class, that by which the organs are stimulated, and a full state of the vessels prevented or relieved, belongs warm, and especially dry air, that varies little in its dryness or its temperature, an atmosphere that deprives the body of little of its electricity; and to the other class belongs a cold and humid atmosphere, the temperature varying, however, frequently and rapidly, the air becoming drier or moister as it is warmer or colder, an atmosphere that depresses the powers of the system by carrying off the electricity rapidly from the surface of the body. Attention to climate, a judicious selection especially of the place of residence in the autumn and spring, avoiding low situations, and a heavy and wet district, and protecting the surface by such articles of clothing as are bad conductors of heat and electricity, are the practical lessons taught by knowing the effect of air upon plethora. Light, too, has much effect in lessening the plethoric tendency, and of course its influence is greater when assisted by the warmth of the direct rays of the sun. The effect of light in adding to the activity of the various secreting organs has long been known to be great, and it has even been said, the hypothesis being, however, far too exclusive to be true, that the rays of the sun are the only useful agents in lessening the predisposition, and relieving the system from the consequences of gout. It is not necessary to entertain so extreme an opinion, in order to appreciate very highly and adequately the influence of light upon plethora, and consequently

upon this disease. The deductions from this fact hardly require to be mentioned. It teaches the importance of daily exposure to the light of heaven ; and that this is more necessary to the plethoric than to others, and should be enforced on them more rigidly, and indulged in by them habitually, and for a longer part of every day, than may be necessary for the well-being and health of other people. It teaches that people of plethoric habit, or plethoric tendency, should court the valuable agency of every sunny day, and be exposed to it for as long a time as is consistent with other duties. It points out and marks the folly of people, having this habit, or the tendency to it, passing a large proportion of the hours of light in their beds, fulfilling the duties, business, and pursuits of society during the night, and probably, for months at a time, hardly feeling the sun's rays, or being exposed to its direct light, till the day is near its close, and these rays have become too oblique, and the light too faint and of too short duration, to have much influence on their systems ; for the more perpendicular the rays, at least within certain limits, and the stronger the degree of light, the greater is the effect on the eliminating organs. It teaches, that those persons should choose rooms with a south aspect, and should surround their rooms with bright and pale colours, and that darkened rooms, however much they may be thought to add to the general look of luxurious quiet, and to dispose to languid reverie, and a cheating pleasing epicurean indolence, are prejudicial to

health, but especially baneful to those liable to plethora, or suffering, or likely to suffer, from any of the ailments that are grafted upon it.

To the class of agents which promote the action of the eliminating organs, belongs muscular exercise, acting as this does in some degree, and more or less directly, on all those organs, but more particularly on the exhalants of the skin and the lungs. The effect of muscular exercise on the action of the skin, on the amount of fluid or vapour secreted from its very extensive surface, is well known, although commonly this effect is perhaps not sufficiently estimated; and as it is in part by checking the amount of this secretion, that cold acts in increasing the plethoric tendency, this furnishes a powerful, and for the most part efficient, means of preventing the undue influence of cold on the system, independently of the chemical effects of exercise on the expenditure of the body. It should be remembered always, that, for this purpose, the exercise should not be carried beyond the bounds of fatigue; for, as has been said before, it is injurious in many ways, and in none perhaps more, than in lessening the activity of the vascular action of the surface, diminishing its vigour, and rendering it more sensitive to the influence of cold; by which any amount of temporarily-increased action is very speedily rendered nugatory, by diminished cutaneous secretion; whilst the general system is deranged, the blood collected in undue quantity in the internal organs, and disordered action risked, if not produced.

To be efficient in its influence on plethoric tendencies, by increasing the amount of secretion from the skin, viewing, for the sake of convenience, this consequence of muscular exercise singly, the exercise need not be severe, nor fatiguing; but it must be regular, and taken to such a degree as to produce a slight sense of weariness, and no more. But muscular exercise increases, to a material degree, the amount of the pulmonary exhalation, an important secretion, that is at all times great, and by so much is the volume of the circulating fluids diminished.

Another and important agent in promoting the action of the secreting organs is cheerfulness, and the exciting passions generally, when exercised in moderation. If indulged to excess, like undue muscular exercise, they exhaust the nervous energies, and are followed by languor, which always acts detrimentally by diminishing the expenditure of the system. A moderate, but efficient and regular, use of the faculties of mind has likewise much influence in promoting the general powers of the system, and the action of the various organs, and in increasing, or keeping up to the standard required for the body's well-being, the amount of its expenditure; and, by coupling this with the depressing effect of undue exercise of mind, and the consequent exhaustion of nervous power, and the torpor and sluggishness of the organs, that result from this exhaustion, we are able to understand and explain many cases of disordered action. We find, that to use the mind too little is to involve torpor and

derangement of the secreting and excreting organs, ministering to plethora and the diseases connected with it; in the same way as to use the mind unduly is to rob the organic system of so much of its vital power, diminishing its activity, and adding to plethoric tendencies. The depressing passions diminish the activity of the organs, and lessen the amount of their secretions. These remarks may afford a clue to the fact, that great as are the modifying influences of the different temperaments on the mind and the body, yet they appear to be almost equally liable to plethora and its consequences; for, whereas the sanguine temperament, involving as it does a preponderance of the exciting passions, would seem, at first sight, to be by so much less liable to diseases dependent on deficient expenditure, yet the benefit accruing from the due and regular exercise of these passions is too much modified and counteracted by their undue indulgence, and their irregular action, to produce the beneficial results that might have been predicated and looked for; and so with the melancholic temperament, atoning much by its quiet regularity for its deficiency in the exciting emotions, it continues on its path with a steadiness that keeps it on a par with its more active but less regularly acting rival, illustrating the fable of the hare and the tortoise, and making the two temperaments to be much alike in the character and amount of disordered action they suffer from. It is probably true, that gout shows itself as much in one temperament as in another.

The mind, with its emotions and passions, has much to do with gout in all its relations, stages, and phenomena; and it is an important remote cause of gout, and assists much in giving rise to the predisponent cause of the disease. Remote causes usually produce their effects so gradually, require so comparatively long a time to work out their ends, that they are liable to be unnoticed, or unappreciated. It is so difficult to give sufficient credit to the influence of mind upon body, so difficult to connect together, in the relation of cause and effect, the illness of to-day with any of the habits that have become familiar to us by months or years of indulgence or usage, and particularly so the illness being physical, and its remote cause undue, or irregular, or deficient use of the mind's faculties. It has been said, by a well-known practitioner, who has been in practice perhaps fifty years or more, that if he were now a young man, and could get people to do as he would have them, he should not despair of at length seeing no more of gout, the so-called opprobrium of medicine; and there is no doubt, that constant attention, and a thorough acquaintance with the remote causes that lead to the predisposition, and a steady avoidance of them, would, in the course of a couple of generations, leave the race free from this distressing consequence of the doings of their fathers. For this great end, an end the importance of which can only be adequately felt by the man whose limbs are hopelessly crippled, the influence of the mind must be taken into the account; and

bright and happy thoughts, habits of cheerfulness, a mind at ease, a well-used intellect, a restrained but regularly-used imagination, must be felt the importance of: for this the passions must be kept in check, and their course well directed, and the feelings be subjected to the judgment. To effect this, while the mind's culture and discipline are left in their proper and high place, and admitted to be the first great duties of man, to which all else must and should be subservient, it must be ever remembered, that the mind is connected with the body, and sympathises with it intimately; and that, as the body must have a certain amount of physical power and healthiness, in order to the mind's fullest vigour, and most active and useful state, so must the mind be efficiently but temperately exercised, to keep up such a degree of vigour and efficiency of the nervous system generally, as shall enable it to fulfil, as well as possible, its organic duties, and render it capable of performing that amount of necessarily extra duty, which civilisation, with its pleasures, and privileges, and immunities, imposes upon it. For man's system is placed in an artificial state, a state in which the natural circumstances of man are constantly and unavoidably interfered with; and more and more so, the further the advance of civilisation, the more refined, and enlightened, and intellectual, the social condition; and this interference alters man's relations to the things around him, and their influence upon his system; and, while the total result is to

diminish much the average annual mortality, to reduce endemic, and mitigate very greatly epidemic complaints; and although, under the influence of civilisation, famine and pestilence, at least in their worst shapes, cease to affect him; yet, on individuals, the result is less uniformly beneficial, and is only beneficial so far as the organic laws are obeyed, and the man lives according to the physical requirements of his organisation. The risk of departing from this line of duty, the risk of disobedience to the organic laws, increases, as the individual finds it less and less necessary to toil for his daily bread, or the comforts and luxuries of life become more amply spread around him; as plenty, and ease, and luxury come to be his regular attendants; as, now fairly removed from the necessities, he turns his mind to the study of the embellishments of life, to the acquisition of knowledge, and the elevation of his spiritual nature. By degrees,—the system more or less pampered, the exhaustion left by satiety relieved from time to time by stimulants, the use of the muscles neglected, the mind's faculties unduly used, all the doings being dictated by inclination or caprice, always, either by excesses, or by sluggishness, or by inordinate application of mind, interfering with the laws of life,—a state results, which deviates more or less from health, and may be different according to its cause, or be modified by various circumstances, and at length ends in disease of some particular organ or structure, or of more than one; the seat of the disease,

the congenital constitution, the physical character, and the mode of life of the individual, giving to it distinctive marks, and individual features; the disease being called acute, or active, or chronic, according to its degree of intensity, or according to the rapidity with which it runs its course. For it is very observable, that all diseases run through a course, which is more or less defined; and they may indeed still be considered, as they have so long been, to be an effort of the system to rid itself of what interferes with its processes to such an extent, as to militate against its well-being. The course of a disease may be modified and influenced by attendant, and extraneous, and accidental circumstances, but the course is nevertheless in some degree marked; the vital powers may sink under the effort, and death ensue; or the struggle may be protracted, and the individual be very imperfectly restored to his state of health; or the struggle may be brief, and the evil quickly and fully got rid of. Still, a marked tendency is observable in diseases to run a certain course, the simplest form of which is presented by some fevers, which appear in periodical fits or accessions, having defined intervals between them, during which there is apparently complete freedom from the complaint; and such fit returns, passes off, returns, and passes off, until at length the object of the system would seem to have been gained, and the individual, although the struggle may leave him weak, is well again, and freed from the disease. A defined course is more or

less observable in all diseases, the purpose of the disease being to relieve the system from what is hurtful to it. The injurious and hurtful matter may be one that immediately involves the welfare of the body, and that produces a speedy struggle—such as any animal or vegetable poison, or miasma, or the specific and powerfully noxious matter generated by certain diseases, and communicable to other systems, as the exanthemata, syphilis, &c.; or it may be one that is the slowly-produced result of long-continued disturbing influences; but still the disordered action, once set up, has a course to run, the end of which, if the vital power sustain the struggle, is to relieve the system from the morbid condition. The character of the ailment, its duration, and result, are all much influenced by the tissue previously affected by it; the effect being more immediate, the struggle more violent, and the course more rapid, if the nervous system be involved primarily, or only secondarily, by the morbid condition. The character and duration of the malady, and its result, are likewise influenced by the organ that is attacked, whether primarily or only secondarily; and the localisation of the ailment is usually much influenced by the inherited, the congenital, or the acquired constitutional peculiarities of the individual; and in this way is it, that, from the same causes, arise morbid actions of very different kinds. One, or more probably the combined action of several remote causes, may induce plethora; and this may end very differently,

according to the hereditary, congenital, or acquired peculiarities of the system; or the question may sometimes be determined by the exciting cause, or accidental circumstances, and what had seemed likely to end in congestion, and that in inflammation, of some of the internal organs, may terminate in gout, or *vice versâ*. This may serve to simplify the nature of the intimate connection there is between inflammation of the liver, or stomach, or heart, or kidneys, &c., and gout; how they seem to be so frequently grafted upon one another, or to be substituted for one another, as we find them to be. Arising so frequently from the same predisponent condition of the general system, the nature of the resulting malady being determined, perhaps, by inherited, or acquired peculiarities, or, perhaps, it may be only by what happens to blow the smouldering fire into flame, it cannot be wondered at, that they should sometimes co-exist, or that at other times one should lead to the other, the secondary complaint frequently producing a mitigation, or entire removal, for the time, or perhaps altogether, of the primary disease. What is here said must not lead to the erroneous supposition, that it is believed that inflammatory affections of the internal organs proceed uniformly from the same predisponent as gout; because, most commonly, this is not the case: congestion does not, in a large majority of these cases, precede the inflammatory development; nor, when congestion does precede that development, is it by any means

always, nor perhaps in a majority of instances, preceded by plethora,—using the word plethora to mean that condition in which the blood is probably excessive in point of quantity, and deficient in its proportion of serum, the red particles being in excess, and redundantly charged with fibrine. Using the word plethora in this sense, it is, as far as we know, the predisponent of gout; and it may not be too much to say, that every person affected with it, is more or less liable to gout; a liability which may be added to, or diminished, by many circumstances, and which may never end in the disease, but terminate in some other ailment, or may be relieved or diminished by change of habits, or by the alterations consequent on advancing life, till the plethoric state gradually passes away, with its risks and its dangers.

But, supposing the plethoric condition to result in disordered action, which is localised, and constitutes any given malady; and that the disease runs its course; and at length, sooner or later, terminates in the individual's restoration to health; it follows, that, whether from a loss of tone, or vital contractility, in the vessels of the part, or from some mysterious and undiscovered cause, the same disease is apt to recur in that part or structure, and is generally set up more easily than it was in the first instance; and the more easily, the shorter the interval between the attacks, and the longer the first attack may have lasted, and the stronger the predisposition, and the greater the number of the exciting

causes, and the more the susceptibility to them, and the greater the degree of exposure to them, and the less the care taken in diminishing the strength of the predisposition, and in avoiding or guarding against the exciting causes. Hence it is, that causes, to the influence of which a system may have been exposed repeatedly, and without injury, previously to the first attack of disordered action in any structure, so readily influences its reproduction; and that to be long without an attack of a disease that may have been undergone once or oftener, becomes, as time passes on, important, as diminishing the chances of an attack. It is curious how very different in this respect are the diseases which arise from certain specific poisons, such as small-pox, and those arising from plethora, or other ordinary predisponents to disease. In the one case, the attack seems to saturate the system with the poison, or to produce such a condition as proves effectual in preventing its reproduction, until a considerable time has at length exhausted the cause on which this exemption depends, and the person again becomes liable to suffer from the disease, being, however, at no future time so liable to suffer from the introduction of the morbid influence, as he originally was; whereas, in the other case, every attack only adds to the liability to the recurrence of the disease, and the time that elapses between the attacks diminishes, instead of adding to, the liability.

From the above may be gathered, that when any

individual has been once attacked with any of the diseases not arising from specific morbid matter, his susceptibility to a recurrence of the attack becomes so great, as to depend less and less on the amount of predisposition to it, and less and less upon the extent to which the cause or causes originally predisposing to it may be in operation. Thus, the plethoric condition may be in reality materially reduced, whether by the advance of years, or change of habits, or otherwise; and yet the attacks of the disease be no less frequent, although their violence may be greater or less, as the system is more or less vigorous, and their duration longer or shorter, as the attacks are less severe or more so; and thus the attacks may become more and more frequent, their character more and more sluggish, and their duration longer and longer, while the state on which the disease was originally founded, the condition of system that was in the first instance its predisponent, becomes less and less marked, until it may have left few traces of its existence. How well this is illustrated by the phenomena of many diseases will be readily seen; how aptly it is illustrated by gout is very evident; and when this is connected with the fact that plethora is more easily kept up, and more easily reproduced, than originally engendered, it will cease to be a matter of wonder, or to appear mysterious, that these diseases should be so liable to recur, or that they should recur more readily on every succeeding attack, or that the tendency should increase, the attacks become more

unmanageable, their course more tedious, and their return more frequent. We see disease grafted by an exciting cause upon the predisponent habit of body ; we see, that disease, having run its course, at length terminates in a so-called restoration to health, that restoration being, however, in reality, so far imperfect as to leave the parts affected more liable to an attack of the disease than they had previously been ; we see, that it is a work of considerable time to restore the parts that had been the seat of the morbid action to the same condition they had been in previously ; we see this altered state of the organs affected, which may be distinguished by the word morbific, become more and more marked after any attack ; and we see, besides all this, that the predisponent habit of body is liable to become more and more confirmed by every attack, while its influence in ministering to the morbid tendency is more than proportionably increased ; and, on the other hand, while age or other circumstances may lessen and modify the predisponent habit in a great degree, and, perhaps, even wholly remove it, this may take place without removing the disease that was originally grafted upon it, and without sensibly lessening the risk of future attacks of the disease ; and, further, we find that disease once set up, not only leaves behind it the elements and ground-work of future attacks, but, when the attacks have been repeated, so affects the whole economy, so influences the whole habit of the system, as to render it probable that the

habit will be transmitted to the individual's offspring, that the children will grow up into the same habit of body, and be liable to suffer from the same kind of morbid action. The phenomena of gout illustrate all this, and the illustrations sometimes prove fatal. When gout first attacks the system, it is backed by plethora, either actively or passively; the system is surcharged with nutrimentary matters, has abundant materials for sustaining the attack, and carrying on the struggle to a successful end. But, after repeated attacks, when the plethoric condition has become less and less, from the advance of life or some other cause, when the vital energies are sensibly reduced, the attacks are less and less efficiently resisted, the disease triumphs more and more over the enfeebled and atonic system, the struggle becomes longer, the attacks run so insensibly into one another that the sufferer seems to be exposed almost constantly to gouty visitations, and, at length, the powers sink, the energies are expended in the conflict, and the sufferer dies. How important is the lesson that all this conveys; how strongly does it show the necessity for an early and vigorous endeavour to lessen the predisposition, to strike at the origin of the evil, and strive to root it up; how different is frequently the conduct of the gouty from this rational course. The man, often when in highest health and vigour, is acted upon by some of the numerous exciting causes, and is attacked by gout; he goes through much and violent suffering, but it is short-lived; the attack soon passes off, and has relieved the system from

the immediate pressure of the plethoric condition. During the fit, while the pain, and the lameness, and the general feeling of malaise last, the man lives by rule, and takes physic *secundum artem*, and does as he is bidden to do; but the lesson is soon over, and almost as soon forgotten; the task-master has left his side, the system is restored to its capabilities of mind and body, is left more apt for exertion, more sensitive to enjoyment; the intellect is keen, the feelings more bright, the organs more active and regular; and the old habits are resumed, and the means by which the predisposition was originally acquired, or had been confirmed, are kept in use. Such is the common early history of gout, and such is the course ordinarily followed, whether from wilful blindness to, and a perverse disregard of, the consequences, or from an ignorance of those consequences, until a second and third fit have, within the next two or three years, been undergone; and, at length, the fit has become almost a periodical visitation, and, it should be added, almost a periodical necessity. And this is indeed one of the most curious of the features of gout, connected with its predisponent cause. It may be difficult to understand why it should be so, but it is nevertheless too true, that not only is the liability to gout added to by every successive attack, and not only is local power of resistance to the disease diminished materially by every fit of the disease, but at length a habit of body is engendered, to the, so to speak, well-being of which, an occasional fit of gout is necessary; and if the vascular

powers be too feeble, or the vascular torpor be too great, the nervous energies, in fact, be too weak, or too much oppressed, to expend the morbid tendency on the accustomed tissues, the general habit becomes more and more deranged, a disturbed condition of the whole body is set up, the functions are impaired, the mind becomes irritable, the sleep is rendered imperfect and unrefreshing, all the capabilities, the feelings, and the organic duties are seriously affected; and at length, unless providentially the fit of gout comes on, a greater evil is substituted for it; disordered action, perhaps involving immediate risk of life, is set up in some internal organ, from which, if the individual recovers to a certain extent, he may be left but the wreck of his former self, and be a poor shattered invalid for the shortened remainder of his existence. Thus it will be seen, that, if the predisposition to this disease be not early attacked, and if fit after fit be allowed to succeed one another, a true habit of gout comes to be produced; a habit which must not be rashly or incautiously, if at all, interfered with; a habit which ties up the hands of the most experienced, and renders the procrastinating materially the fit, even when this is practicable, a thing only to be attempted after considerable weighing of the pros and cons, a matter that is often hazardous and unwarrantable.

There is, then, a two-fold risk connected with the fits of this disease. The one arises from the local changes left by the disease, and probably consists in diminished tonicity of the vessels of the part or parts, that had been the seats of the attack; but,

however this may be, the consequence is, that the disease is more readily localised in those structures afterwards, than it had been in the first instance ; a condition from which the parts only recover by length of time, even to a certain extent, and from which they are probably never wholly relieved ; this local condition being of course aggravated by the repetitions of the attack, and, other things being equal, the state becoming worse and worse, the shorter the intervals between the attacks, and the more severe the attacks may have been, and the longer they may have lasted. And, it is to be borne in mind, that the state now adverted to is altogether independent of saline or gelatinous deposit in the tissue of the parts, and refers exclusively to some alteration in the physical, or physico-vital condition of those parts, to which the presence of deposited matters may or may not be superadded. The other source of risk refers to the general habit of body, which becomes so far affected by the effect of several fits of gout, as to involve a gouty necessity, or gouty habit. How this effect is produced, is not known. Whether it has a similar influence to that of periodical losses of blood, whether naturally or artificially produced, the consequence of which we know to be increased action of the formative, and diminished action of the destructive organs, and an eventual addition to any tendency to fullness of the general system ; or in what other way it acts we cannot tell ; but there are few things so important, of such practical interest, so full of reason for just anxiety to those liable to suffer from this disease,

and furnishing stronger motives for using every means to lessen the chances of gout. Under the stringent influence of these two circumstances, let gouty paroxysms have once fairly taken up their position in any system, and have drawn it into a contest on a few occasions; and, however easily the enemy may seem to have been shaken off by the vigour of the system; however quickly, and to all appearance satisfactorily, the skirmishes may have ended in the triumph of the constitution over the malady; the disease will have gained an unseen, and seldom thought of, or appreciated, advantage, on every occasion; it has been gradually producing a greater and greater change in the tissues affected, rendering the defences weaker; and every attack is less effectually repelled; and it has been gradually producing so belligerent a habit in the body, as to make it dependent on this injudicious, and necessarily injurious, way of ridding itself of those redundant powers, that had to be produced to meet these attacks, and which continue to be prepared, whether the attacks are made, or are not made. And thus it is, that a cure of gout is so seldom effected, when it has once fairly made good its position in the system, when two or three fits have been undergone; and thus it is, that the gouty tendency increases, and the paroxysms become more tedious, and are less satisfactorily got over; thus it is, that, at length, a man's health, and even life, often come to hang on the miserable probability of a timely attack of this distressing and troublesome complaint.

CHAPTER III.

EXCITING CAUSES OF GOUT.

OF the exciting causes of gout, those which act the most commonly and the most influentially, are changes, and especially sudden and great changes, in the temperature, &c., of the air. Sudden changes from heat to cold, or cold to heat, from dry to damp, or damp to dry, often prove the exciting cause of a paroxysm of this disease. The effect of these changes on the secreting and exciting organs is well known. Cold diminishes the amount of the secretions from the skin, and adds to that from the lungs and kidneys. The effect of atmospherical changes, in adding to or diminishing appetite, in influencing, sometimes improving, sometimes deranging, the state of the digestive organs; their occasionally marked influence on the bowels, on the circulation, on the spirits, on the clearness and vigour of the intellect, on the nervous energies; perhaps all being more or less attributable to the effect on the vessels of the surface, and the altered relative duties of the great excretories of the system—the skin, kidneys, and mucous membranes, having relatively more or

less duty to perform—are sufficiently familiar; and the consequence of this altered relative amount of duty required from these different parts, may be some interruption to the amount of the expenditure of the system, or some derangement in the equilibrium of the circulation, a retention of some of the waste of the system, or an imperfect assimilation of some of its new materials, or a congestive state of any organ or tissue, and consequent derangement, irritation, and perhaps disease. The effect of such changes on the action of the remote and comparatively superficial capillaries may be conceived to be frequently great; and it is probable that the capillaries of the tissues subject to gout, and more particularly when they have already suffered from one or more attacks of the disease, cannot be much or suddenly influenced by any cause of disturbance to their duties, without considerable risk of the excitement of a paroxysm of gout. At all events, a fit of gout is often very evidently excited by sudden and considerable atmospherical changes. Hence, spring and autumn, especially perhaps the former, are so apt to be trying to the gouty, and so commonly the periods when the fits make their appearance; hence, the more variable and severe the weather, the more difficult is apt to be the management of gout cases; a few warm and sunny days acting on the vessels of the surface, and by so much relieving the kidneys, &c., from their extra duties, and by so much equalizing the distribution of the blood, and relieving congestive tendencies; often evidently putting an end to

cases that had threatened to be troublesome, and had for weeks proved tedious and unsatisfactory in their progress, and making the convalescence prove to be unexpectedly early and rapid.

Another, perhaps not uncommon, exciting cause of gout is an immoderately large and heavy meal of food. There can be no doubt, that the passage of imperfectly digested matters through the duodenum is likewise an important exciting cause of gout. This may be owing to the general irritation of system thus induced, which may act as the spark, the preparations for the fit having been necessarily made before, by the long-continued action of the predisposing causes; or it may be owing to the direct congestion of the bowels, and the interference with the hepatic and portal circulation, and with the free return of the blood from the extremities to the heart; or it may be owing to the generation of lactic acid, as has been ingeniously supposed, and the consequent demand for alkali for its neutralization, the extreme capillaries being thus robbed of the soda necessary to prevent the deposition of lithic acid; but, however this may be, a full meal of food, which oppresses the powers of the stomach, unduly robs the system of its nervous energies, and deranges the equilibrium of the circulation, or a dyspeptic attack, with the passing of crude matters along the duodenum, may be the unquestionable excitants of a paroxysm of gout. It is not unlikely, that whatever may interfere with the duties of the capillaries of the fibrous tissues, whether it act by

diverting from them the vital or nervous power by means of which their functions are performed, or otherwise, may be an exciting cause of a gout fit, if acting suddenly, and to a considerable degree, and under favouring predisponent circumstances.

An inordinate indulgence in the use of stimulants is likewise sometimes an exciting cause of a gouty paroxysm. This is more apt to follow a debauch of wine, than of spirits, or spirits and water; and more frequently follows an excess in the effervescing, or the heavy astringent wines, than of the lighter, thinner, and perfectly fermented wines. A few glasses of Champagne are invariably followed by a fit of gout in some people; and this wine is probably more likely to induce it in most gouty people, than a proportionate quantity of other wine. Port wine is perhaps entitled to be placed second in this list of detrimentals; and below this again, sweet wines. In fact, the wines that are the most immediately and generally stimulating, or those most apt to produce intestinal crudities, are those most likely to excite a paroxysm of gout. The effect of carbonic acid in exciting or keeping up gouty irritation has been usually thought to be great; but it has probably been much over-estimated. Its effect in adding to the immediate influence of alcohol, whether taken in wine, or in any other form, in so far as it renders the stimulating influence more rapid, and more general, must be admitted to be great; but whether, independently of this, and of the bad effects of the imperfectly fermented matters contained in the

effervescing wines, carbonic acid has per se any very considerable effect on gout, is very doubtful. That it has some effect, that when gout is largely and extensively present, carbonic acid does act as a stimulus, and add to the irritation, that when gouty irritation is imminently threatening to end in a fit, carbonic acid has induced the fit, we have seen more than once; but that, under common circumstances, it has in itself any such influence, is to be doubted; and accordingly, aerated waters may very generally be used without any risk, as the common beverage of gouty people, and even allowed during less violent paroxysms, and in the sequel of most attacks. This distinction is practically important, because medicines prescribed to be taken in the effervescing form are usually more grateful to the patient, and, should the stomach be in an irritable condition, a very common case during the gouty paroxysm, medicines taken in a state of effervescence are generally less apt to be rejected, than when taken in any other form. But this requires judgment on the part of the practitioner; and it should be remembered, that, when gouty irritation is extensively present, either during or previous to a paroxysm, carbonic acid may per se either aggravate, or possibly induce, a fit of gout. In respect to malt liquor, it is so generally an imperfect result of fermentation, as to be exceedingly liable to interfere with the digestive processes, while its stimulating effects disturb and derange the nervous system; and by so much is it likely to increase gouty tendencies,

and perhaps to excite the gouty paroxysm. Containing, as it very generally does, a large quantity of mucilage, unfermented sugar, and fixed air, in a state of mixture with a larger or smaller quantity of alcohol, malt-liquor is apt to produce crudity, as well as intoxication. Ale that is old, and thoroughly fermented, without having undergone any degree of acetous fermentation, which is thin, and clear, and mild, partakes more of the characters of sound wine, with the addition of the bitter narcotic principle, and is chiefly objectionable from its merely stimulating effects, and its tendency to increase the plethoric state which predisposes to gout. It would seem, that the consumer of alcohol, in the more concentrated forms, pays the penalty of his excesses in other ways; that disease of the kidneys, or liver, is the not more desirable result of his sensual indulgences; and that he seldom suffers, unless perhaps accidentally, and comparatively early, from gouty irritation. But it sometimes happens, and perhaps oftener than is commonly supposed, that the first indication he meets with of the penalty to be paid for such excesses, is a fit of gout. This, soon forgotten, perhaps hardly checks the demoralising course; and disordered action set up elsewhere, brings with it its own penalties; and gout probably returns no more.

Local injuries, as sprains or blows, often prove the exciting causes of gout. To the same head may be referred the effect of a tight shoe, or whatever interferes materially, or suddenly, with the due action of

the capillaries of the tissues that are liable to gout. The effect of local injury in irritating and disturbing the nerves of the part, in interfering with the exercise of vital power on the functions of the capillaries, the effect of such injury in increasing the action of the arteries leading to the part, in interfering with the passage of blood through it, in obstructing the return of blood from it, all combine to produce so much disturbance of the part injured, as is sufficient to explain the setting up of gouty action in a system predisposed to it, and the fixing it in the so injured tissues. And, thereafter, the localization of the gouty action may be determined by such injury, or by the consequent attack, and by the local weakness or physical changes of the injured part; the part injured being always peculiarly liable to become the seat of the inflammatory action. The length of time that may intervene between an injury, and the selection of the part for the seat of localized disease, is often very extraordinary. It frequently happens that ten or twenty years may elapse between an injury to one of the joints and an attack of rheumatism or of gout, and yet the injured joint prove to be peculiarly liable to be attacked by the disease.

As the influence of mind is great on the production and character of almost all diseases, and as its influence is very considerable on the production of the gouty predisposition, or in fixing or aggravating it, so is the effect of mental causes great in exciting the paroxysms of gout. The passions, whether

exciting or depressing, anger, or joy, or grief, or anxiety, have a decided influence on the gouty irritation, adding to it when present, and frequently inducing it when there had been no previous indications of it. This is well known. It is probable, that the exciting passions have more commonly the effect of inducing a paroxysm of the disease; the depressing passions, that of inducing a state of smouldering and masked goutiness. Mental exhaustion, however brought on, is a very common exciting cause of gout; indeed, it is questionable, whether an intellectual, is not as frequent an exciting cause of gout, as is a sensual debauch. The thought expended by Sydenham, in writing his celebrated treatise on this disease, induced the worst fit of gout he had ever had.* Mental anxiety is likewise a frequent exciting cause of gout, no doubt leading to much the same undue expenditure of nervous energy as excessive thinking. Excessive and inordinate bodily fatigue, abstaining from food for an unusually long time, loss of sleep for one or more nights, according to the degree of physical strength, and any other means by which the nervous energies may be unduly expended, and the capillary vessels deprived of their needful vital influence, are all powerful and common exciting causes of this disease.

Whatever greatly expends and reduces the powers

* "But as my immoderate application to this work occasioned the severest fit of the gout I ever had, it was a caution to desist from my undertaking, though with reluctance, and consult my health, * * * * for the gout constantly returned, as often as I attempted to go on with the work."—*Sydenham's Works, translated by Swan.*

of the system, especially if acting strongly and quickly, may form an exciting cause of a fit of gout. This is, perhaps, explicable on the principle of interference with the functions of the remote capillaries, diverting the nervous energies from them, to meet the new and pressing circumstances in which the system is placed; the capillaries of the gouty system having always the predisposition to be so far deranged, as to be unable to perform their duties sufficiently to prevent the deposition of crystallizable materials. Hence a fit of gout is so frequently a sequence of severe febrile and inflammatory attacks, and by no means rarely comes on immediately after venesection for the relief of such attacks. The same effect which, when produced suddenly, may bring on an acute fit of gout, may, when brought about gradually, produce masked goutiness, or the chronic or the irregular form of the disease. Thus, if, from circumstances, a man who has the gouty habit, and has had several attacks of the disease, comes to eat less, or to live on less nourishing diet, or to take less wine, it by no means follows that the gout will diminish in the same proportion; but, on the contrary, it often happens that he exchanges the normal fit of acute gout, which soon passes off, and leaves few, if any, evil consequences behind it, for a smouldering goutiness that is ever present, ever deranging the general system and expending its powers, and ever adding to the crippling deposition in the gout-affected tissues.

CHAPTER IV.

ON THE NATURE OF GOUT.

ALTHOUGH it must be admitted that we do not know what is the proximate cause of gout, the condition with which the disease is intimately connected, and upon which its phenomena seem to be chiefly dependent, is well known. It consists in the deposition of lithic (uric) acid, and its compounds with alkalies, and principally with soda, in the fibrous tissues. It is this which serves to distinguish gout from other diseases, which is the principal feature of its morbid anatomy, and which guides its treatment, and influences its results.

The lithic acid diathesis presents itself in two forms, which are in most respects different from one another, and only one of which can be said to be necessarily connected with gout. In the one, the deposition takes place in the bladder, or in the pelvis of the kidneys, forming, perhaps, the nucleus of a calculus; in the other, in the fibrous tissues, especially those of the joints, forming eventually gouty concretions, or chalk stones. These two forms of lithic acid deposit are greatly, and perhaps essen-

tially, different from one another. The liability to deposit lithic acid in the kidneys, or the bladder, affects chiefly the young. Of the cases of urinary calculi, it appears that nearly two-thirds depend on the deposition of lithic acid, which forms the nucleus of this large proportion of these calculi. Nearly one-half of all these cases appears to occur before the age of puberty, and probably more than two-thirds of them occur before the age of forty years. Calculous disease is chiefly dependent on climate and diet, and does not appear to be essentially connected with plethora; nor, consequently, do inactivity of body and intemperance seem to be among its ordinary remote causes. It does not appear that hereditary influence is among the ordinary remote causes, to which calculous disease can be traced. In the majority of these cases, hereditary influence is probably wanting; and it does not seem to affect the children of those who ever suffered from it, if the circumstances of climate and diet have been changed. From these statements, it may be inferred, that the connection between calculous disease and gout is by no means intimate. And yet, it appears that from forty to fifty years of age, there is an evidently increased liability to urinary calculi—a liability greater than obtains at any period after the age of early manhood; that there is a still further increase of this liability, between the ages of fifty and sixty years; and, perhaps, allowing for the constantly lessening expectation of life, especially after the age of sixty, this liability may be

supposed to continue at a maximum point, if not to go on increasing, afterwards.* It is only in this respect, and in the marked tendency observable in most gout cases to the deposition of lithic acid from the urine, upon its cooling, and *perhaps* in the greater liability of persons who suffer from urinary calculi in early life to suffer from gout afterwards, that any connection between calculous and gout cases can be traced. But this is not so singular, as it might at first appear to be. The deposition of lithic acid in the bladder, or in the pelvis of the kidneys, is only a morbid excess of a natural product, a product which is always found in healthy urine. Of a less degree of this excess, the sign would be the deposition of lithic acid from the urine, after it had been passed, and upon its becoming cold—lithic acid being less soluble in cold than in warm liquids. This is

* “The following Table represents the numbers of calculi occurring at decennial periods at the Bristol, Leeds, and Norwich Hospitals. The two first, are from Mr. Smith’s valuable paper, published in the eleventh volume of the Med. Chirurg. Transactions. The last, from ‘A Treatise on the Formation, Constituents, and Extraction of Urinary Calculus. By John Green Crosse, Esq., Surgeon to the Norfolk and Norwich Hospital. London, 1835.’

	Bristol.	Leeds.	Norwich.	Total.	Consists of	Males, 1,205 Females, 51.”
“Under 10 years of age .	136	83	281	500		
Between 10 and 20 . .	65	21	106	192		
„ 20 and 30 . .	35	21	48	104		
„ 30 and 40 . .	34	12	48	94		
„ 40 and 50 . .	37	28	47	112		
„ 50 and 60 . .	28	21	96	145		
„ 60 and 70 . .	18	9	70	97		
„ 70 and 80 . .	2	2	8	12		
	355	197	704	1,256		

—Dr. Prout.

the degree to which it usually prevails in the gouty habit of body. If the excess of lithic acid in the urine be greater than this, it will be deposited from the urine while in the bladder, or before it reaches the bladder; and if retained there, whether from spasm, or from delay in emptying the bladder, or from any other cause, it may readily collect together, be cemented by mucus, or other animal matter, and form the nucleus of a calculus.

This, however, is only an excess of a natural product—an excretion met with in the part destined to receive it previous to its expulsion from the body; and if this product be met with elsewhere in the system, and in a part in which it is not found in the healthy state, it must show a greater degree of morbid disposition, and be connected with a much disordered condition of the tissue in which it is formed. *Whatever this condition of the fibrous tissue may be, it is probably the proximate cause of gout.* It is not inflammation; for inflammation occurs in this tissue from injuries, and (as in the case of rheumatism) from cold, without the deposition of lithic acid being among the results.

It has been lately said, that the undue formation, and the deposition of lithic acid, may be ascribed to deficient oxygenation of those organic atoms that have served their purpose in the economy of the body, and are being separated from the structures of which they have formed part, and which require an additional proportion of oxygen for their conver-

sion into a soluble product, which product would eventually form urea, and be expelled in that form by the kidneys.* There can be no doubt, that the deposition of lithic acid is much favoured by its extreme insolubility. Dr. Prout says, that lithic acid requires 10,000 times its own weight of water at 60° to dissolve it; adding, that lithate of ammonia only requires 480 times its weight of solvent at the same temperature.

Although gouty concretions do not consist of uncombined lithic acid, but of lithic acid in combination with alkali, yet it is not impossible, and is, perhaps, probable, that when first deposited, lithic acid is not in this state of combination, but that, by virtue of its affinity for alkali, it gradually takes soda, &c., from the blood, until it has combined with its equivalent. This would serve to explain the immediate deposition of lithic acid where it is formed, and likewise that other alkalies, besides soda, are often found combined with it, although in comparatively small proportions, soda being the principal alkali of the system.

How far deficient oxygenation of the atoms of the tissues about to be separated from the living structures, or of the atoms of the blood about to be taken into the composition of those structures, can be proved and established as the cause of the

* For an exposition of these views, and many other curious and interesting speculations, see "A Treatise on Gravel, Calculus, and Gout; chiefly an Application of Professor Liebig's Physiology to the Prevention and Cure of these Diseases. By Henry Bence Jones, M.A., Licentiate of the College of Physicians, &c."

formation and deposition of lithic acid, is, however, very doubtful. The hypothesis is most ingenious and interesting; but whether it is to be regarded as being of much or any practical value, has still to be proved. Urea is much more soluble than lithic acid; and an additional proportion of oxygen may possibly convert lithic acid into urea; or, the adding to an organic atom such a proportion of oxygen as will not suffice for its conversion into urea, or some compound having the same proportion of oxygen, may lead to the formation of so much lithic acid in its stead; but this has not been proved. And the chemistry of the living body is so different from that of inorganic matter—life modifying and controlling the laws of affinity so greatly—that any inference of what takes place in the living body, from what takes place out of it, should be drawn with much care, and received with great caution.

To return, briefly, to the amount of connection which may be supposed to subsist between the two forms in which the lithic acid diathesis principally shows itself, the following may be stated as the chief reasons for concluding the degree of that connection to be small:—1. Calculous affections are chiefly seen in particular districts, where they may fairly be referred to the influence of cold, and of a peculiar diet, but, perhaps, especially the former; and still more so, when its effects are liable to sudden and great increase, by combination with wind and rain, checking, as this would, the secretion from the skin, and deranging, consequently, the

functions of the stomach. The effect of this on the undue formation of lithic acid may, or may not, admit of further explanation. It may be, that in this way, lactic acid, an excess of which is almost always formed in the stomach when its functions are deranged, and which, some think, is never found in the perfectly healthy state in any quantity, is produced in large quantities, is absorbed, enters into combination with whatever alkaline matter it encounters in its course, that is not held so firmly in combination as to be beyond the power of its affinity, and thus robs the system of so much of the alkali disposable for the neutralization of the lithic acid, and leads directly to its deposition in the kidneys or the bladder. This is, however, only hypothesis. 2. Gout is not confined to particular districts, but is evidently earned, wherever it occurs, either by the errors in diet and regimen of the progenitors, or by such errors on the part of the sufferers themselves. 3. Calculous disease is rarely met with in gout cases; the most that can be said of such connection between the diseases being, that those having calculous disease when young, are, perhaps, *cæteris paribus*, more liable to gout in after-life, than other people. 4. Calculous disease is more frequently met with in the young; gout is, for the most part, a disease of advanced life.

If the idea that deficient oxygenation is the proximate cause of gout, or that it brings us a step nearer to whatever may be the proximate cause of the disease were true, it would follow, that the

treatment of gout, and the circumstances in which it chiefly prevails, would be regulated by it; and gout should be found when the diet is so charged with carbon, as to demand a large expenditure of oxygen for its disposal in the system; and gout should be relieved by such a diet, as would support life with the smallest proportion of carbon in the food. Neither of these conditions generally obtains. The potato-eating peasantry of Ireland—the peasantry of Scotland, who subsist almost exclusively upon oatmeal porridge and oatcake, peasm meal and barley meal cake, buttermilk, and broth chiefly made of cabbages, leeks, turnips, and carrots—are essentially in the condition of consuming the greatest proportion of carbon in their food; yet gout has never been known among the peasant population of either country. The cases in which gout is so notoriously induced by the large use of animal food, and the proportionably less use of vegetable food, and in which, perhaps, no other of the admitted remote causes of gout have been in operation, of which cases the occurrence of gout in butchers affords a strong example, certainly militate against the opinion, that gout is a disease that depends on deficient oxygenation of any part of the system. Nor can such cases be explained away on the ground, that they may be ascribable to the quantity, and not to the kind of food; for the peasantry of Scotland consume very large quantities of their vegetable diet, and such large quantities must be necessary to them, containing, as such food does, a

very small proportion of azote, which is largely expended in their proverbially active and laborious lives, and which large expenditure can only be maintained, and health and strength at the same time supported, by the consumption of considerable quantities of food which contains so very small a proportion of azote. Those who most contend for the opinion, that gout is owing to deficient oxygenation, maintain, with equal ardour, that azote is essentially expended by every movement of the body; and, therefore, the expenditure of azote by the active and industrious peasantry of Scotland must be great; and to obtain this amount of azote, from the kind of food which they subsist upon, a large quantity of it must be consumed by them, which, in its turn, containing a much larger proportion of carbon, than food consisting of animal matter and wheaten bread, must expend more oxygen in the same proportion; and, if gout were a disease dependent on deficient oxygenation, it would seem to follow, as a necessary consequence, that such people should be liable to gout, so far as diet could ever be a remote cause of the disease. It is not intended by these remarks to be asserted that gout may not, after all, be intimately connected with deficient oxygenation; but, to assign them, as containing reasons why the opinion should be most cautiously advanced, until it be proved; and should not be permitted to influence our views concerning the nature of gout, or our management of this disease, until such proof be afforded.

Whatever be the cause of the deposition of lithic acid in the fibrous tissues,—whether a deficient supply of oxygen for the conversion of the organized atoms of the system into soluble matters to be removed by the blood vessels, or a deficiency of nervous or vital influence to ensure whatever changes are necessary to health, such deficiency involving a diminished control of the chemical affinities of the different constituents of the blood or of the tissues themselves, and perhaps permitting thereby a premature resolution of certain of those constituents into one of the ultimate products that are only destined for immediate excretion,—it is not improbable, that the irritation of the capillaries of the part, resulting from the throwing down of crystalline particles of lithic acid, or of its compounds with alkali, may be the true cause of gouty inflammation, and may help to explain many of the phenomena and peculiarities of the disease. The long period generally, and perhaps always, necessary for the formation of the gouty habit; the instant aggravation of the local derangement, and immediate development of inflammatory action, which follows the action of such exciting causes, as would add suddenly to the amount of deposition, and so increase the degree of irritation to a point inconsistent with the normal discharge of the functions of the part,—such as the formation, or the increased production, of lactic acid, consequent upon a debauch, or an injury from a blow or a sprain; the various degrees of gouty inflammation; the rapidity with which the inflammatory action passes from one

part to another; the degree to which the disease may be modified, its manifestation retarded, its violence moderated, and its duration shortened by alkaline medicines, by diaphoretics, purgatives, and other evacuants, and by carefully regulated diet; and, in short, all the phenomena of the disease do probably countenance the hypothesis, that the deposition of lithic acid always attends an attack of gout, and perhaps always precedes it. But, nevertheless, this is only hypothesis; and is only entitled to any attention, because it does not appear to contradict any of the phenomena of the disease, and because it does not militate against any one of the practical matters, which experience has shown to be useful and important, in its treatment and prevention.

Gout is always a disease of inflammatory character, the degree of inflammation being very different in different cases and varieties of the disease. It was at one time generally believed, that inflammation is the cause of the deposition of lithic acid; and this opinion is still held by some. Arthritic inflammation, however, occurs in every degree of intensity and duration, and in every fibrous tissue of the body, without such deposit being among its results, and without the supervention of such deposit in any case in which the remote causes of gout may not be ascertained, or reasonably inferred, to have been in operation.

The uniformly inflammatory character of gouty action has led to various opinions respecting the

nature of the disease. Some have supposed that gout is an arthritic inflammation, of which the deposition of lithic acid might or might not be one of the results. Others have so far modified this opinion, as to believe the inflammation to be influenced, and to derive a peculiar or specific character, from a loss of tone in the affected tissue ; and others, from a loss of tone of the system generally. These opinions have been advanced with several other qualifications, all of them, however, leading to, and ending in, the opinion, that inflammation of the fibrous tissues is essentially gout. It has been urged, that were gout dependent on a morbid condition of the blood, or more strictly a constitutional ailment than common inflammation, and more decidedly under the influence of hereditary predisposition than ordinary inflammation, the disease would show itself earlier in life than it usually does. But when the hereditary influence is strong, and the life of the individual favours that influence, we find that gout does early show itself. In a patient of mine, the disease made its first appearance when he was ten years old ; and although such cases must be of comparatively rare occurrence, it has happened to me to meet with several cases in which the disease has appeared before the age of sixteen. Of course, when hereditary influence is either absent, or not strong, the other remote causes are more likely to act on the system, when it is expending less, than during the years of growth, or during the years of active exertion ; in fact, when time has laid its sobering

hand on the individual, and he moves less and sleeps more, and possibly has both the means and inclination to indulge himself in an amount, and a richness, and a variety of food, which he had been unaccustomed to in earlier life, and in the use of wine or other stimulants to an equally greater degree.

Plethora cannot be the proximate cause of gout ; although, from the time of Galen to our own days, this has been a favourite opinion. But plethora is not disease. The local congestion, the inflammation, the disturbance of function, the production of morbid matters, or of normal secretion or excretion in tissues not adapted to receive, make use of, or eliminate them, constitute disease ; and plethora and these effects, to which it often leads—and perhaps more often in civilised life than any other predisponent of disease—should be carefully distinguished from one another. Plethora cannot be gout, any more than it can be congestion or inflammation of the liver, or the brain, to which it is equally a predisponent cause.

It was, for a long period, customary to resist every explanation of morbid action founded upon alteration in the character of the blood, or even intimately connected with an inferred pre-existence of such alteration ; and hence, perhaps, the opinion prevailed so long, and was maintained so universally, that gout arises from plethora, and consists in inflammatory action, the localisation of which is determined (according to some) by

unknown circumstances, or (according to others) by diminished tonicity of the part,—that the inflammation is the consequence of re-action, which involves excessive momentum of the blood,—the re-action being preceded by deficient contractility of the vessels of the part, and partial stagnation of their contents, and being probably an effort to restore the normal condition of those vessels,—the deposition being the result or product of the inflamed state of the capillaries. It was further believed, that the direction of the morbid momentum of the blood might be changed by certain causes, or under certain circumstances; and in this way was explained the relief afforded to one disordered organ, by the supervention of disorder in another organ. There appears to be a good deal of assumption in these opinions. The pre-existence of the atonic state is taken for granted, or admitted on the insufficient grounds that the part has felt cold or benumbed; the re-action is of course equally assumed, so far as it is made to be the result of the atonic condition; and the summary classing of all the results of the morbid state as the *bonâ fide* consequences of inflammation, can hardly be held to be fit matter of assumption. If, however, assumption, and hypothesis founded upon it, are allowed to be put forth, it seems simpler to allow, that the condition of the blood may have a share in producing such phenomena, and to suppose that the great magazine of the nutriment, the medium by which the elevated temperature of the body is maintained,

the great solvent of the body's waste, and the direct source of its secretions, may be a pathological agent of the first importance. And this would not be so large an admission, as it might at first appear to be. Supposing the blood to be by no means more inert in pathological, than it is in physiological effects, it is nevertheless a manufactured result, dependent for its condition on the amount and the character of nervous power, on the activity of the voluntary, and especially of the involuntary muscles, and consequently on the rapidity and equability and equilibrium of the circulation; and therefore the condition of the blood, even if allowed to be a probable and a powerful cause of disease, cannot be regarded as its final cause. Pathology is confessedly and lamentably imperfect in many of its attempts to explain the phenomena of disease; and, whilst the admission, that certain conditions of the blood conduce to the production of disease, may often render such explanations simpler and more feasible, it does not take away, in any degree, from the importance which must be attached to derangement in the action of the heart and arteries, or change in the momentum or the equilibrium of the circulation, in producing or increasing morbid conditions.

These considerations, however, concerning which, in all probability, there will be always much difference of opinion, and regarding which, opinions will probably undergo frequent changes, as the laws and phenomena of chemical action come to be better known, and physiological action and pathological

changes to be further understood, have fortunately little effect on the treatment of disease, which, after all, must probably continue to be largely empirical. Until the day arrives, if it ever should arrive, when pathological phenomena are cleared of all doubt and obscurity, the practice of medicine must chiefly consist in watching the phenomena: i. e. the course, symptoms, and terminations of disease, and treating the symptoms as they arise, under the control of what is known of the history, and the peculiarities, commonly presented by whatever may be the disease in question. The constitutional symptoms of small-pox and of simple continued fever, as regards the action of the heart and arteries, the state of the sensorium, and the condition of the respiratory, the secreting, and the excreting organs, may be nearly the same; yet small-pox and continued fever could not be judiciously treated in all respects alike. Gout and a severe sprain, or other injury of any joint, may present, at a given time, very similar constitutional disturbance and local appearances; yet the same treatment would not be applicable to the two cases. A thorough acquaintance with the general history of a disease, including its various remote and exciting causes, its usual course, and the morbid changes that are produced by it, derived from careful observation of a large number of cases, is necessary to render the treatment of symptoms as they arise, as successful as it might be, and the practice as rational, as the state of the science of medicine will allow. In the present

state of our knowledge, much doubt, and much difference of opinion, must attend every attempt to go beyond this. It may be an interesting speculation to strive for an explanation of the proximate cause of a disease; but it can be little more than a speculation; and it is seldom of any avail in the practical business of a medical man's life.

On the whole, it does not seem to be improbable, however, that the deposition of lithic acid in the capillary vessels of the fibrous tissue precedes, and is the immediate cause of gouty inflammation; and that this deposition is induced and favoured by plethora,—the vessels being surcharged with blood, the blood itself containing an undue proportion of nutritious particles, and the blood in those vessels being consequently less rapidly acted upon, and undergoing less completely the chemical changes which take place in the capillaries, that are necessary to its healthiness.

This hypothesis would assist us to understand the *modus operandi* of plethora, as a predisposing cause of gout, and of its several exciting causes, and to explain much of the historical detail of the disease. It might serve to explain the uneasy sensations affecting the whole system, that so generally precede a gouty paroxysm, and attend it throughout its course—a condition peculiarly deserving to be called morbid sensitiveness, and the constitutional disturbance occasioned by the suppression, or the inadequate development, of the gouty paroxysm. It might help to explain the well-

known fact, that, in the earlier paroxysms, it is seldom that more than one or two parts are affected with the disease; whereas in subsequent attacks, almost all the joints are liable to gouty inflammation, and many of them frequently suffer from it at the same time.

Whatever may be the true rationale of gout, there is no doubt, that, in the history of every case of the disease, when the individual is visited with frequently repeated attacks, the time soon arrives when an approaching paroxysm must not be checked, or, when it has appeared, cannot be arrested with impunity. Might not this hypothesis serve to explain this important fact? Supposing the capillary vessels of the part or parts affected to have become charged with lithic acid, and that, by any means, this is prevented from giving rise to such an amount of increased local action, as may be necessary for the removal of this morbid product from those vessels, and its return to the circulation, the result might be much general disturbance, and a translation of the morbid action to some of the more important and larger organs, by the more considerable action of which the system might be freed, even at the risk of life itself, from the morbid product. Or, if this should not happen, should circumstances prevent such vicarious relief being given to the capillary vessels, might it not be inferred, *à priori*, that the irritability of those vessels would be at length exhausted, that the morbid action would become chronic, that the

disease would smoulder, the formation of lithic acid increase, the morbid deposit be poured out into the surrounding tissues, and the complaint be in this way temporarily relieved? And it is certainly true, that, when the fit of gout is not interfered with, when it is of acute character, fully developed, and runs its course rapidly, little or no deposit follows the fit, and serious disturbance of any of the great viscera seldom attends or results from it, further than the general pyrexia attendant on so much local inflammation, and so much agonising pain, would fully account for. And it is equally true, that it is when the development or the course of the paroxysm has been accidentally or unwisely interfered with, or when the enfeebled or the oppressed powers of the system, or its general derangement, has prevented, or retarded, or modified it, that the paroxysm of gout is most liable to be followed by deposition into the fibrous tissue. This hypothesis seems to embrace the various phenomena of gout, and to meet and explain, better than any other, its different causes, its course, and its results.

This view of the nature of gout would reconcile some seemingly opposing facts, connected with the predisposing cause of the disease. It has been contended, that gout cannot be connected in any necessary degree with plethora, because it is not always cured by low diet, and consequent spareness of habit. But, in the first place, plethora is as much a consequence of deficient expenditure, as of inordinate

supply of nutriment; and it is questionable whether any amount of low living can remove plethora, although it may reduce the size of the body, and take away much of its superfluous fat, if the due expenditure of the body is not likewise fully secured, by exercise of mind and body, regularity of life, and indulging in no unnecessary amount of sleep. Exercise is essential to the equilibrium of the circulation; and without it, although the general system may not be plethoric, certain parts and organs will be in a state of congestion, to which the name of local plethora may be fitly given, and which may render such parts liable to any of the diseases to which plethora acts as a predisponent. The same observation is applicable to irregular habits of eating, or drinking, or sleeping. They are incompatible with the healthy discharge of the several functions of the system, and with the equal momentum of the blood in all parts of the body. The same is true as regards the making use, habitually, of an unnecessary amount of sleep, which not only diminishes the expenditure of the system, by so much as the sleep is more profound, or longer continued, than is necessary to restore the powers of the body, but greatly promotes and increases local congestion. This might serve to explain the occurrence of gout in cases, to which the term plethoric might seem to be inapplicable, as regards the whole system. It is, however, very doubtful, whether gout ever makes its first appearance in a system that is not, and has not long been, plethoric; but

the above observations might assist in explaining the recurrence of gout in many cases, when so great an alteration has been made in the amount and character of the food, and during so long a time, as to justify the opinion that general plethora has been entirely removed. In the second place, however, such cases might admit of being otherwise explained, by taking into consideration the consequences that may be reasonably supposed to follow gouty inflammation, in the condition of the tissue that has been its seat. Its vessels have been surcharged with blood, and perhaps been irritated by the morbid deposit of lithic acid, and will probably have lost more or less of their vital tonicity ; and hence the tissue will be less able, than it may have been originally, to resist causes of disturbance. In the third place, it has apparently escaped the recollection of some who have written on this subject, that there is every reason for believing, that gout is a disease which is long being prepared for ; that the capillary vessels have been, probably, for a long time, under the influence of local or general plethora ; and it may be inferred, if gout is so much, and so primarily, connected with the deposition of lithic acid, as there seems reason for thinking it to be, that lithic acid may be formed in those remote and minute capillaries, numbers of times, and the acid be restored again to the circulation, and eliminated ultimately by the kidneys, without the occurrence of gouty inflammation ; and that this may happen very often, if no exciting cause disturbs the

equilibrium of the circulation, and if the amount of lithic acid, thus morbidly formed, is not greater, than the blood coming into contact with it is able to regain, and restore to its own composition, before the occurrence of an exciting cause of gouty inflammation. It is, moreover, a reasonable inference, that the disposition to form lithic acid in these capillary vessels, if once incurred, would increase; and that this would result from less and less powerful causes of derangement; while the vessels would be less and less able, from the effects of plethora, if not from the consequences of gouty inflammation, to resist the mechanical or chemical influence of the morbid product; and a less powerful cause would suffice for the production of an attack of the disease, than might have been originally necessary to produce it. If to this be added the effect of palpable change in the tissues of the parts that have been repeatedly visited by gouty inflammation—thickening, and deposition of masses, more or less concrete, of lithate of soda, the gradually or rapidly increasing frequency of gouty paroxysms, and the difficulty of diminishing that frequency, unless all the aid is given that a total change of habits might afford, seem to admit of no very improbable explanation. These statements might even lead to the inference, that, although plethora is necessary to the production of gout, and is in the first instance an essential part of the gouty habit of body, it may cease, or almost cease, to be essential to the continuance of the disease, when it is once established,

and when repeated attacks have produced changes in the parts that have been affected—the capillaries of the parts having probably lost much of their vital tonicity, the momentum of the blood being imperfectly resisted by them, the tendency to their becoming congested being by so much increased, and by so much more easily induced, the functional offices of the vessels being less perfectly performed or more easily interfered with, and the tendency to the formation of morbid material being increased or continued, by the slow or imperfect formation of new tissue from the blood, or the tardy, or the defective separation of the old tissue, that would result from these circumstances.

Why the phenomena of gout are confined so strictly to the fibrous tissue can only be matter for speculation, and can hardly be of practical interest. That a disease, which must, perhaps, be generally admitted to be largely dependent on some derangement of the blood itself, should select any given tissue for its localisation is curious, but is not singular. The disease which, confessedly, shows most strongly a close connection between general derangement of the constitution of the blood and local lesion is scurvy; and yet the lesions of this disease are confined, almost exclusively, to the skin and mucous membranes. Why gouty inflammation is confined, with equal strictness, to the fibrous tissue, may possibly be ascribed to the density of this tissue, the slowness with which its component atoms are changed, the comparatively few blood-vessels with which it is consequently supplied, and the degree to

which it is consequently removed from the influence of the heart and arteries. The blood being supposed to be in a state of proneness to form morbid products, it might be inferred that such would be most likely to be formed in the most minute vessels, and in the tissues to which the fewest and smallest vessels are almost exclusively sent, and especially if the disease were supposed to depend, in any degree, on the slowness with which the wasted material of the system is dissolved by the blood, for the purpose of being transmitted to the emunctories of the body, or on the slowness with which the blood is converted into new tissue; and, perhaps, this may be admitted to be no very improbable explanation of the selection of the white fibrous tissue as the seats of gout and rheumatism,—two diseases which are thus far allied to one another, although differing greatly in their causes, their results, and their treatment. It seems not improbable, that even in what is commonly called muscular rheumatism, it is the white fibrous membrane which forms the muscular aponeurosis, or the denser fascia of the same tissue which ties down the muscles, rather than the muscular fibres themselves, which are affected with the disease. This might serve, both in the case of gout and of rheumatism, to explain in some degree their extremely painful nature—the dense tissues they occupy yielding less readily to the mechanical distention necessarily attending inflammatory action, than less dense tissues may be supposed to do.

It is true, as regards this question of the localisation of gouty inflammation in the fibrous tissue, that the deposition of lithate of soda, which is certainly one of the peculiar effects, and one of the strongest evidences, of the disease, has been found in parts far removed from the white fibrous tissue. In most of these cases, however, it may be traced to those tissues, having made its way through the intermediate parts by ulcerative absorption. But it must, perhaps, be granted, that cases have been occasionally met with, to which this explanation could not be fairly applied; and in which, it must be allowed, that the deposition has been formed, and the gouty action has consequently had its seat, in some other tissue than that to which it is in most cases confined. Indeed the phenomena of gout, apart from its morbid anatomy, seem to justify, and almost to require, this conclusion. The sudden cessation of gouty inflammation in a joint, and the almost simultaneous appearance of inflammation in some of the great viscera, such inflammation assuming many of the peculiar characters of gouty inflammation — the disturbance of the nervous system, the irritability of the circulation, the nervous intolerance of the pain, the impatience of the loss of blood, unless in the most severe cases, the influence of narcotics, &c., &c.—seem to involve the conclusion, that gouty inflammation may have its seat occasionally in other than the white fibrous tissues. It may be likewise supposed, that the difference of character, which is found to distinguish

common inflammation of the different tissues, would not be wanting in the case of gouty inflammation; and that there may be many cases of true gouty inflammation affecting the viscera or the different tissues, but evidenced by symptoms so different from those which attend gouty inflammation of the fibrous membranes, as to be frequently mistaken. That the tissue which is usually the seat of gouty inflammation is the cause of the peculiar degree and character of the suffering that attends it, as well as of other features of the disease, is at all events, beyond a doubt.

If, in reply to the suggestion, that the selection of the fibrous tissue for the ordinary seat of gouty inflammation is possibly influenced by its rigidity, the slowness of its vital processes, and the degree to which it is removed from the ordinary influence of the heart and arteries, it be urged, that the same may be said still more strongly of the bones, which are seldom or never the seat of gout; or of the periosteum, which is seldom affected by gouty inflammation; it may be answered, that there is one circumstance which makes a considerable difference between the fibrous tissues of the joints, and the bones, or their periosteum. The former are flexible, and are therefore liable to suffer from causes of disturbance, by which the latter are not influenced.

Perhaps it might be supposed, that if gouty inflammation were to attack the viscera, or their membranes, as frequently as it is found to retrocede — *i. e.* to be suddenly checked by an accession of

inflammation of an internal organ, or as frequently as internal inflammation is found to be immediately relieved by an attack of gouty inflammation of a joint, or as frequently as the delay of an expected fit of gout in the joints is found to produce inflammation of some of the viscera, or their appendages, the sufficient proof of such being the case would be found, on inspection, after death ; and the viscus, or membrane affected, would show a deposition of lithate of soda. But, it must be remembered, how very probable it is, that the absorption of such deposit takes place after most cases of gouty inflammation of the fibrous tissues, from which absorption must be difficult, because those tissues are so far beyond the influence of the heart's action, and of the vital influence so largely bestowed on the great viscera and their membranes ; and that the concretion of such deposit in the softer, more vascular, and, if it may be said, more vital structures, must be infinitely more rare, than in a dense tissue, the blood-vessels of which, when not irritated or inflamed, are of too small a calibre to admit the red particles of the blood.

Morbid action of the liver, and probably a congestive state of the portal system of vessels, is so frequently attendant on the gouty condition, as to have induced some writers to include it in their definitions of the disease, as constituting in their opinion an essential part of the gouty state. This opinion must, however, be received with modifications ; for cases of gout do certainly occur, in

which there is no evidence of disordered action of the liver, nor any symptoms that could justifiably lead to an inference that the portal vessels are suffering from congestion; and but for the admitted frequency with which hepatic disturbance does attend gout cases, this class of affections might be placed with the many morbid conditions of the great viscera, which are so often found to be involved in the general disturbance that attends gouty inflammation, whether depending directly on the pyrexia, and the disturbed equilibrium of the circulation occasioned by it, or arising from the same predisposing cause as the gout itself, or being in fact a simple extension of the gouty action. But, although it must be stated in unqualified terms, that gout does sometimes present itself without any attendant indication that the functions of the liver, or that the vessels which supply it, are deranged; and although it still more frequently happens, that the amount of hepatic derangement is no more than the constitutional disturbance, and the resulting derangement of the nervous system, the circulation, and the organs of nutrition and excretion, would sufficiently explain, without connecting disorder of the liver more intimately with gout cases, than disorder of any of the other viscera, yet it must be confessed, that in a large majority of gout cases, the liver is deranged to a much greater degree than the other organs, and that there does appear to be some link between gout and the hepatic functions which connects them together more closely

than gout and disordered action of any other of the viscera, perhaps not excepting the kidneys. If it could be shown, that gout is the result of deficient oxygenation of the waste, or of the nutrimentary matter of the system, this connection would admit of being easily explained; for, as the liver is the great emunctory of carbon, and as carbon is the great means by which oxygen is consumed in the body, derangement of the hepatic functions might be readily understood to be a direct means of aggravating the gouty condition; and this, in its turn, by deranging the economy of the organic processes, would re-act upon the liver, and increase its disposition to morbid action. But, even with the opinion that this chemical theory is still sub judice, the connection between gout and functional derangement of the liver may be, perhaps, in some degree, explained. The predisponent of gout being plethora, and the plethora being, for the most part, the direct result of such habits as would overwork the digestive organs, derange the functions of the stomach and bowels, and subject them to the disturbing and irritating action of the morbid secretions that would be produced by such derangement, the liver would, in most cases, be influenced by the long-continued disturbance of these viscera; while the overloaded state of the system, and its deficient expenditure, would cause the system to be surcharged with carbon, to eliminate which, the action of the liver must be severely tasked, and, failing this amount of action, the organ must become

deranged, and eventually suffer from congestion and its consequences. But in whatever way the frequent occurrence of hepatic disorder, in gout cases, is to be explained, the fact is unquestionable; and it has the effect, in all such cases, of increasing and prolonging the constitutional and local disturbance occasioned by the gouty paroxysm, and is an important subject for attention and treatment.

There are a few remarks, on the state of system in which gouty inflammation eventually shows itself, that may be appended to these views of the nature of gout, and may properly precede a detailed history of the disease. It should be borne in mind, that an attack of gout is the result of causes which have been long in operation; that plethora, resulting from an inordinate supply of nutrimentary matter to the blood, or its deficient expenditure, or both, will have been, in all cases, in operation during a long period of time, and will have gradually induced derangement of the *primæ viæ*—the formation of lactic acid, and other products, which, either *per se*, or from their being in excess, are to be looked upon as morbid; that the action of all the great emunctories of the body—lungs, skin, kidneys, liver, and mucous membranes, will have been interfered with, and possibly so much so, as to have deranged the ultimate processes of change in the tissues affected, and to cause them to deviate more or less from their normal condition. Whether in this way or not, it is unquestionable that a cachectic condition of system becomes engrafted on the plethoric.

and contributes to the formation of the gouty habit of body; and whereas simple plethora is little liable to suffer from the influence of morbid agents, and especially the ordinary exciting causes of inflammation, cachexia is the condition in which the system is most susceptible to their influence. Cachexia is probably inseparable from the gouty habit of body, and is, perhaps, a connecting link between plethora and the localisation of the disease. It is possible, that the capillaries are thus deprived, in some degree, of their vital tonicity, and in this way become less able to resist the action of causes, by which their important functions may be greatly, or suddenly, interfered with. To this must be added, the effect of the cachectic state on the nervous system—the morbid sensitiveness, the mobility, and the diminished vital power. A full habit of body—the blood being redundant in quantity, and abounding in the elements of nutrition, and an atonic condition of the vital and animal powers, must be admitted to be compatible with one another, and to be co-existent in the gouty habit. An attack of gout is, in fact, the tardy result of a long-acquired and a confirmed habit of body, modified by gradually increasing functional derangements; and is probably an imperfect means of relieving the system from its causes of disturbance; establishing a precedent for subsequent attacks of the same kind, by increasing the atonic condition of the affected tissues. If it be added, that a highly painful and intense degree of inflammatory action is set up, in

tissues of the greatest importance to the free and unimpaired use of the articulations; and that the inflammatory action has a definite course to run, which, coupled with the cachectic condition in which it arises, forbids the same energetic depletory means to be resorted to, as may serve to arrest a common inflammation, which has no ulterior uses, and which occurs in a system having its vital tone and nervous energy unimpaired; there is a complete and unexaggerated sketch of gout,—a disease that was at one time regarded as the great evidence and boon of the *vis medicatrix naturæ*.

CHAPTER V.

THE HISTORY OF GOUT.

GOUT is chiefly evidenced by the occurrence of paroxysms of febrile character, attended by inflammation, which usually has its seat in the fibrous tissues of the joints. A paroxysm is made up of exacerbations, alternated by remissions or intermissions. The exacerbations become gradually less severe, and the remissions or intermissions longer, or more decided, until the paroxysm ceases altogether, leaving the part or parts principally affected, weak and morbidly sensitive, and the general system more or less enfeebled, for a considerable time afterwards.

The history of a paroxysm of gout varies very little in different sufferers, while the disease is of recent origin, provided that it be of acute character. The management of different cases, the amount of the predisposition, the habits of life, &c., cause the progressive history of individual cases to be widely different from one another.

In most cases, the attack is preceded by symptoms of disordered action, which are generally

strongly marked, and sufficient to indicate that some powerful morbid influence is at work, and a serious ailment is at hand. It is probable, that the first attack of gout is almost always preceded by such indications, more or less strongly marked ; and it is quite certain, that, previously to the subsequent attacks, symptoms always occur, by which an attentive sufferer may predict the invasion of a paroxysm of the disease. Such symptoms can often be ascertained to have occurred previously to the first gouty paroxysm ; and might possibly, on strict inquiry, be found to precede it invariably. Among such symptoms, varying much in their relative degree in different individuals, are to be reckoned, disturbed sleep, interrupted at times by violent starting of the limbs, and particularly of the legs,—cramp, sometimes affecting the arms, or the loins, but in a much greater number of cases the backs of the legs,—a degree of numbness of the lower extremities, said to be chiefly complained of in the thighs,—a tremulous convulsive movement extending down the limbs,—a sense of creeping under the skin,—slight and evanescent sensations of chilliness, affecting particularly the back and lower extremities,—slight stiffness, and even soreness, of one or more joints, in some cases of many different joints in succession, sometimes amounting in degree to great pain of one or more joints, on attempting to use them, causing lameness when affecting the tarsal or metatarsal joints, and being often mistaken for a sprain,—a sense of general

lassitude,—and more or less of stomach disturbance, commonly attended with acidity. The degree of gastric derangement differs very much in different cases, being sometimes attended by unmistakeable gastritic symptoms. The bowels are usually costive; but in some cases, on the contrary, are irritable and relaxed. The state of the urine differs much in different cases, but is generally high-coloured, somewhat scanty, and slightly clouded, occasioning so much irritation of bladder as to render the necessity of micturition somewhat more frequent than usual. Mental irritability, the well-known stigma attached to sufferers from gout, and which commonly attends the paroxysm, frequently precedes its accession, manifesting itself in occasional and unreasonable outbreaks of passion, or of captiousness. This, alternated perhaps by extreme depression of spirits, is singularly remarkable in some people, previously to every paroxysm of gout, as well as during the fit.

It must not be inferred, from this catalogue of symptoms, that it is usual for the gouty to be seriously indisposed before the occurrence of a paroxysm of the disease. In most cases, such symptoms are of but occasional occurrence, and then do not last long. And, more usually, for some time before the paroxysm,—it may be only a few days, or it may be many weeks,—with the exception of the occasional restlessness at night, or the sleep being suddenly broken by cramp or spasmodic pain, or a short, and more or less well marked,

febrile paroxysm, passing through the three stages of chilliness, heat, and perspiration, in a very short time, or now and then felt indigestion, and mental irritability and depression, it is very noticeable, that the individual has a better appetite, is in better spirits, and has more activity of mind and body, than is his wont. The accession of the fit is sometimes ascribed to one or other of these causes: to the inordinate dinner that may happen to have been eaten, or a few extra glasses of wine that, under the influence of high spirits, may have been drunk, or an outbreak of joyous excitement that may have been indulged in, or a long walk or ride that may have been taken, within a few hours before the fit. In some instances, the paroxysm may have been excited by some such cause; but it is equally likely, that the state of the nervous system to which these may be traced, results from the localisation of morbid action, and the relief thus afforded to the system in general; and it is certainly true, that there is generally a great and well-marked relief of any symptoms of derangement, within a few hours of the invasion of a fit of gout—the uncomfortable, or troublesome, or painful and distressing symptoms disappearing, gradually, or sometimes suddenly, the appetite becoming good when previously otherwise, the digestion unattended by a single symptom of discomfort, and the mind cheerful.

At length, however, the paroxysm of gout sets in. In the first, and in the earlier attacks, the paroxysm

makes its appearance between one and five o'clock in the morning, awaking the patient suddenly from sleep, by severe and agonising pain of some one part—usually, as is well known, of the second joint of one of the great toes.

“The patient,” thus writes the illustrious Sydenham, and his is the best history of a paroxysm of acute gout, that has ever been penned, “goes to bed and sleeps quietly, till about two in the morning, when he is awakened by a pain which usually seizes the great toe, but sometimes the heel, the calf of the leg, or the ankle. The pain resembles that of a dislocated bone, and is attended with a sensation, as if warm water were poured upon the membranes of the part affected ; and these symptoms are immediately succeeded by a chilliness, shivering, and a slight fever. The chilliness and shivering abate in proportion as the pain increases, which is mild in the beginning, but grows gradually more violent every hour, and comes to its height towards evening, adapting itself to the numerous bones of the tarsus and metatarsus, the ligaments whereof it affects ; sometimes resembling a tension or laceration of those ligaments, sometimes the gnawing of a dog, and sometimes a weight and constriction of the membranes of the parts affected, which become so exquisitely painful, as not to abide the weight of the clothes, nor the shaking of the room from walking briskly therein. And hence the night is not only passed in pain, but likewise with a restless removal of the part affected

from one place to another, and a continual change of its posture. Nor does the perpetual restlessness of the whole body, which always accompanies the fit, and especially in the beginning, fall short of the agitation and pain of the gouty limb. Hence numberless fruitless endeavours are used to ease the pain, by continually changing the situation of the body, and the part affected, which, notwithstanding, abates not till two or three o'clock in the morning, namely, twenty-four hours from the first approach of the fit; when the patient is suddenly relieved by means of a moderate digestion and some dissipation of the peccant matter; though he falsely judges the ease to proceed from the last position of the part affected. And being now in a breathing sweat he falls asleep, and upon waking finds the pain much abated, and the part affected to be then swelled, whereas before, only a remarkable swelling of the veins thereof appeared, as is usual in all gouty paroxysms. The next day, and perhaps two or three days afterwards, if the gouty matter be copious, the part affected will be somewhat pained, and the pain increase towards evening, and remit about break of day."

The pain is variously described, as being scalding, rending, tearing, crushing, and by many other similar terms, all however signifying an intense amount of suffering—a characteristic, perhaps, of all acute inflammatory affections of hard and fibrous tissues. Much and severe suffering unquestionably attends a paroxysm of acute gout; and this is accom-

panied by such symptoms of febrile action as attend other similarly severe and painful inflammatory affections : thirst, loss of appetite, sluggish and deranged action of the excreting organs, febrile heat, and a quickened and jarring pulse, which, however, usually yields to firm pressure of the fingers on the artery, to a degree that is rare in other equally acute inflammatory affections.

The paroxysm assumes a very different type in different cases, In some cases, it is of decidedly intermittent character, the patient being left, after a longer or shorter time, nearly free from pain and from fever, which return, however, after some hours, or in the course of the same day or night, although usually in a less intense degree ; but, in most cases, it is of remittent character, the pain and other symptoms being greatly moderated in degree, but by no means leaving an interval of repose between the exacerbations. In some cases, every exacerbation is marked, as in an ague fit, by a very distinctly-defined cold, hot, and sweating stage ; and it is seldom that a slight sense of chilliness is not perceived before the invasion of the febrile heat, and still more seldom that this is not followed by marked perspiration. The first exacerbation of a first, or an early, attack of gout is generally more severe, and generally lasts longer, than those which follow it ; but this rule is not applicable to the disease, when it occurs in confirmed gouty habits. The duration of an exacerbation does not seem to bear any necessary proportion to its intensity.

In the meanwhile, the part affected has undergone perceptible alteration. In general, cold, and singularly pale or white, immediately before the attack, it becomes gradually hot, red, tender to the touch, dry, and swelled; and then moist, shining as if varnished, and œdematous. If examined early, the increased heat is often only perceptible by keeping the ball, or centre of the palm, of the hand in contact with the part for several minutes, and the part is only tender to deep pressure; and, at this time, there is no redness of the surface, nor any swelling. As the irritation and inflammatory action extend to the cellular tissue and the skin, the part becomes swelled and red, giving a sense of pungent heat to the touch, and being morbidly sensitive; and as the exacerbation subsides, the skin, being relieved in some degree from the disturbing cause, is able to resume its functions, and the part is covered with perspiration; while the irritation of the cellular tissue causes swelling; and as this irritation does not subside simultaneously with the occurrence of the remission, although it may be kept up or increased by the successive exacerbations, the swelling may go on increasing during the remission. The degree of swelling is not proportioned to the character or intensity of the local inflammation, or the general fever, but seems to be much dependent on the condition and idiosyncrasy of the cellular tissue itself. In most cases, however, even of deep-seated gout, which has not extended to the skin, and has consequently not

been marked by redness, nor by greatly-increased heat of surface, the swelling of the cellular tissue covering the affected part becomes eventually so considerable, as to diminish greatly its elasticity, and produce œdema, and pitting on pressure; and so few are the exceptions to this, that œdema assumes the importance of being a valuable diagnostic character of gouty inflammation.

It is usual, that when the surface of the affected part loses its dryness, and becomes perspirable, the inflammatory and febrile symptoms, which attend and mark the exacerbation, subside. It is common to hear this attributed to the relief afforded by the perspiration to the vessels of the part affected. There can be little doubt, that this opinion is fallacious; and it seems right to notice it, because it has, probably, often influenced the local treatment of the disease. The restored functions of the skin of the part is a result, and not a cause, of the diminished inflammatory and febrile action. The relief afforded is due to the remission, which is as much a part of a paroxysm of acute gout, as the exacerbation itself; and the amount of relief is as great, and it is afforded as quickly, other things being equal, when the skin of the part affected does not perspire, as when it perspires profusely. A fit of ague is not relieved by the sweating stage; on the contrary, it has the undesired effect of further debilitating a system already reduced by malarious influence, and the resulting derangement, below the standard of healthy power. An exacerbation of gout is not

relieved by perspiration; but the return of a perspirable state of the surface of the part is the result of diminished irritation of the skin, from diminished inflammatory action of the tissues below it.

The glazed state of the surface of the affected part, which is so singularly characteristic of gout, and which is the consequence of distention of the cellular tissue, and the stretching of the skin above it, is often taken as a sure indication that the disease is about to subside. As has been said, this is a result of diminished local action, and is so far a criterion of the state of the subjacent parts; but it is not a *safe* ground for prognosis, unless supported by other symptoms—by a return to healthy action of the excreting organs, by less disturbed and less broken sleep, by the gradual tranquillization of the heart's action. The amount of predisposition can seldom be guessed, and the degree of goutiness in a system at any given time can never be determined, by any single symptom; and prognoses, founded upon the most careful consideration of all the symptoms of the case, are sometimes fallacious. And it is only in recent gout, that the glazed state of the surface is an indication of the existing state of the subjacent tissues; because the cellular tissue becomes relaxed after repeated attacks; and the gouty action may become so deeply seated, and may lose so much of its acute character, as to make no conclusion respecting the stage or duration of the disease trustworthy, which is in any essential degree dependent on its local appearances.

In most cases of a first or second fit of gout, the disease affects one part or joint, and most usually, as has been said, the second joint of one of the great toes. In some of these cases, however, a second joint, and often the corresponding joint of the other great toe, is attacked, before the entire subsidence of the primary attack. In these cases, the second attack is usually less violent than the first; and the part first affected is, in general, very rapidly restored to a healthy state. In few early cases, are two joints attacked by gouty inflammation at the same time. When this is the case, a large amount of predisposition to the disease may be inferred to exist, and a severe and long-continued amount of suffering may almost always be predicted. It is, perhaps, not often that, in very early attacks of gout, a second joint is affected immediately after another, unless there is a considerable amount of predisposition to the disease.

The duration of the first exacerbation may be 24 hours, or less; the following exacerbations are generally much shorter. The tendency to a periodical type is almost always sufficiently observable. It is very common to find, that the chilliness, which so generally precedes the decided febrile accession, begins about the same period of the following day; but this is not so constant as it is in the case of ague. The succeeding exacerbations become shorter and less violent; until, in a few days, varying from three days to eight or ten, the fit has passed away, the constitutional irritation has subsided, the organs

of excretion have resumed their healthy action, the sleep has become tranquil, dreamless, and refreshing, and appetite and digestion have been restored to their healthy state.

The symptomatology of the attack may be conveniently arranged and investigated in the following order:—Organs of circulation; of respiration; of digestion; of excretion—liver, mucous membranes, kidneys, and skin; and the nervous system.

In determining the state of the circulation, it is extremely important to lay the hand over the region of the heart, as well as to apply the finger to the pulse at the wrist. And should this not give entire satisfaction, as to the perfect correspondence between the action of the heart and the pulse at the wrist, the exploration of the heart's action must of course be carried further, by means of percussion and auscultation.

Although pericarditis, endocarditis, and other affections of the heart, are much less frequently met with in cases of gout, than in cases of rheumatism, yet some degree of derangement of the heart's action is very frequently found; and although, commonly, no more than a laboured condition of its action, this is, in most such cases, sufficient to prevent the pulse at the wrist from being a sufficient criterion of the state of the circulation.

It is always well, and particularly so in a disease so much influenced by the state of the mind as gout is, and so much influencing it in return, not to call the patient's attention unnecessarily, or par-

ticularly, to the condition of any one of the internal organs, and least of all to the state of the heart ; and it may be mentioned, although, perhaps, sufficiently obvious, that it is useful and politic to explore with the hand the regions of the liver, stomach, bowels, and heart, at the same time, preventing, as this does, the neglect of any useful indication which mere touch is capable of affording, and diminishing the risk of alarming the mind of the patient.

The circulation is much quickened in most cases of gouty inflammation. The natural pulse of a large majority of people of gouty habit, previously to any attack of the disease, or between the attacks, is slower than the average pulse of other people who possess the same apparent health ; and it is commonly less excitable, is quiet, singularly free from a bounding, jerking, or irritable character, and in proportion to its degree of fulness is very easily compressed by the finger. This remark holds good in an immense majority of instances. The contrast between an individual's pulse, when suffering from an attack of gout, and when free from it, is very great. The pulse is generally quickened from 20 to 40 beats in a minute, loses its smoothness and equability, and becomes sharp, jarring, and somewhat incompressible. Nevertheless, the pulse is not often really hard, and decidedly incompressible, in an attack of gout. There is generally more of irritation than hardness in its character. Even when the state of the heart's action peculiarly

evidences derangement, it is very rare that an emotion, or even a passing thought, does not influence the pulse in a very notable degree—an effect that is not common in most other inflammatory and febrile affections, which disturb the general system and the circulation, in the same degree.

When the action of the heart is evidently deranged, it is seldom that symptoms are met with of acute or active inflammation of the heart or its membranes. Yet such cases are of occasional occurrence, and should of course be always prepared for. Such cases are probably similar in kind, but seldom of so acute a character, as those which attend cases of acute rheumatism with such fearful frequency—cases of inflammation of the investing, or the lining membrane of the heart, or, perhaps, more frequently of both, accompanied by, or rather producing, thickening of the valves, and such other organic changes, as must eventually and permanently impair the heart's function, and shorten and destroy life. Under certain circumstances, more acute and immediately threatening degrees of cardiac inflammation are occasionally met with. This may be referred to afterwards. In recent gout cases, however, instances of cardiac inflammation are very rare; in recent rheumatic cases they are as frequent; and this will be insisted upon as one of the reasons, for believing gout and rheumatism to be essentially different diseases, having the single feature in common with one another, that their seat is in the same kind of tissue.

But when the state of the heart's action is more laboured than corresponds with the pulse at the wrist—when there is pain over the region of the heart; or when pain is induced by pressing the fingers between the ribs in the cardiac region, or upon the præcordia, directing the fingers upwards, and, in either case, making the pressure gradually and slowly—when there is dulness over a larger space of the cardiac region than the normal two inches square, and the friction sound, or the bellows sound, or both, may be heard on auscultation—the existence of an inflammatory condition of the membranes of the heart must be inferred, and the case must be treated accordingly. Such cases are rarely seen even in confirmed gout. It is only by finding an advanced degree of valvular disease, the progress of which has been slow, masked, and probably unsuspected, that the connection between gout and disease of the heart is commonly denoted. The disease is probably the same as that attendant on rheumatic cases; but it differs greatly in its degree, and consequently in its phenomena. It is probable, that a large number of the cases of confirmed gout have, at some time or other, disease of the heart engrafted upon them; but such disease is almost always chronic from the first, and very slow in its progress, and more important eventually, by helping to shorten the individual's life, or as, perhaps, being finally the cause of death, than as affording indications for decided immediate treatment, or grounds for immediate

alarm. But, so far as confirmed gout cases are concerned, and so far as an ultimate prognosis is involved, and so far as the effect of gout in diminishing the expectation of life, the connection between gout and disease of the heart is very important.

Such disease, as has been said, is rare in cases of recent gout; and it is rare in cases of acute gout, such as is now under immediate consideration. It is when the localisation and development of acute gout is checked, or delayed, whether from constitutional or external causes, or from imprudent treatment—it is when the system, after repeated attacks of gout, losing somewhat of its vital energy, becomes less and less able to set up, and carry through, an acute fit of gouty inflammation; and the disease becomes less acute, or even chronic, or not even definitively localised, but wandering from part to part, in a masked and little active form—it is when the localisation of the disease in the joints being interfered with, the inflammation appears in some deep-seated part, or some part more essential to life, or more liable to disturb the action of the vital organs, by anatomical or physiological connection with them, or by mere juxtaposition—it is when the gouty diathesis increasing after repeated attacks of inflammatory action, the amount of morbid action set up is so great, that inflammation of several joints, and even of several of the larger joints, at the same time, is evidently inadequate to the relief of the morbid condition—that disease of the heart

most usually occurs; and it is then that the state of the heart's action should be watched with peculiar jealousy, and most carefully examined at short intervals of time.

It is not only important to know, that the laboured condition of the heart's action is a possible source of fallacy, in estimating the state of the circulation during an attack of gout, from the pulse at the wrist; but the great difference that is often found between the size, nearness to the surface, &c., of the two radial arteries, should likewise be borne in mind. It is particularly important in gout cases, in which a correct determination of the state of the circulation so much influences the treatment, to obviate all chance of error from this source, by feeling the pulse in both wrists. It is a good general rule, however, in all cases; and one that often does good service. This is, of course, peculiarly necessary, if there be any gouty inflammation in either upper extremity, which may irritate the arteries of the limb.

Another point connected with the state of the circulation in a fit of gout, is the swelling of the superficial veins of the inflamed part, and of those leading from it. This is probably owing to diminished vis a tergo, dependent, perhaps, on the congested state of the part affected. Should the venous system generally be surcharged by any interference with the circulation, as from disordered action of the heart, or lungs, or liver, this effect would be necessarily increased.

The enlarged condition of the veins is very common in parts that are suffering from gouty inflammation; and after repeated attacks, it usually becomes permanent; and as the gout becomes, or is constitutionally, of less acute, or of more chronic character, the veins are usually found to become larger, and to continue so. It need not be said, that there are exceptions to this—that people with very small veins, which never can shew themselves to a notable degree under the skin, and that those in whom the superficial veins are buried in fat, are often gouty. Such cases being excepted, the rule is very general, that the superficial veins of the part become fuller during the attack of gout, that this condition usually lingers for a short time after the inflammation has subsided, and that after repeated attacks it often becomes permanent.

The respiration is usually quickened in a fit of gout, evidently owing to the excited state of the circulation, and the increased demand for oxygenation that is produced by the febrile action. The lungs are seldom implicated further than this in an acute fit of gout. In chronic and irregular gout, the lungs become occasionally involved to a serious extent, as will be subsequently noticed.

The digestive organs are much deranged in a fit of gout. The frequency and the degree to which the functions of the stomach are commonly implicated, is much influenced by its previous condition; and most gout attacks are preceded by dyspeptic

symptoms, which are sometimes severe and of long standing.

However the appetite may have been previously to the fit—and, as has been said, it is occasionally unaffected up to the invasion of the attack, and is sometimes decidedly increased the day before—loss of appetite generally attends the fit itself; and there is often nausea, and sometimes vomiting, the gastric secretions being redundant, and of morbid character. The mouth is usually more or less clammy, covered with thick and often somewhat fetid mucus; and the tongue is frequently loaded with white, or yellow, or, in extreme cases, even with brownish fur. The tongue is sometimes marked with patches of vivid redness; and, when the gastric disturbance is greater, is much reddened, particularly at the edges, the papillæ being irritated and prominent. There is usually thirst, and some sense of distention of stomach from flatulence. There is sometimes much gastric uneasiness, evidently owing to the irritation of the morbid secretions, and when there are no indications of a gastritic condition.

It is rare, that, in acute gout attacks, the derangement of the stomach proves greater than this. But in cases of less fully developed, or of less acute gout, gastritic symptoms are not of unusual occurrence, and are often of great importance. In these cases, the inflammation of the stomach is almost always complicated with much derangement of the vascular and nervous systems.

Such cases may partake more or less of the acute character. They are sometimes essentially chronic. In general, the state of the stomach is alternately relieved and exacerbated, as the gouty inflammation of the joints is adequately developed and localised, or undeveloped, or imperfectly manifested, or wandering. The most acute and urgent degree of gastric inflammation in gout cases occurs in acute gout, when the development of the inflammatory action in a joint has been suddenly checked. These cases will be noticed afterwards. The less acute cases, which occur in imperfectly developed, and in chronic gout, are of much more frequent occurrence. The point at which irritation of an organ passes into inflammation is often determined with difficulty; especially when, as in most gout attacks, there is a highly sensitive condition of the general system. This greatly increases the difficulty of diagnosis in these cases. A somewhat chronic and masked inflammatory state of the stomach is not unusual in cases of irregular and sluggish gout.

In early and acute attacks of gout, the functions of the stomach are almost always much deranged, its secretions are morbid and excessive, and it secretes large quantities of acid and mucus accordingly. In addition to this, and in consequence of it, the stomach is often morbidly sensitive; but it is seldom that in such cases further derangement of stomach is met with, if the external inflammation be localised, and adequately developed. It is

important, however, to bear in mind the possible occurrence of gastritis in the course of an attack of gout; and the state of the stomach should be carefully investigated. Vomiting is occasionally a harassing attendant on gout cases. The possibility of this being dependent on gastritic complication should be kept in view.

The frequency with which gout is complicated with derangement of the liver has been already adverted to. The degree of derangement is seldom great in recent and acute cases; and in many of these, the functions of the liver appear to be unaffected. It is rare that, in such cases, further evidence of hepatic derangement is given, than may be derived from sluggishness of the bowels, and somewhat viscid and dark-coloured fæces. Occasionally, even in early gout, there is fulness and tenderness over the region of the liver, and its secretions are highly morbid or wholly wanting; but such cases are generally traceable to intemperate habits, to the influence of hot climates, or to such predisposing causes as would render the system liable to suffer from congestion or inflammation of the liver, apart from the influence of the gouty state.

Acute inflammation of the liver is very rare in gout cases; and chronic inflammation of the organ is not common, unless in advanced cases of chronic, or of irregular gout. Congestion of the liver is not uncommon in early, but is more common in advanced gout. Hepatic derangement, varying in

degree from sluggishness or irregularity in the secretion of bile, to chronic inflammation of the organ, frequently attends irregular or imperfectly-developed gout; and this derangement may perhaps be kept up, if it have not been produced, by the gouty irritation; for it is generally relieved, and to a remarkable extent, by an attack of gout in the joints.

The bowels are almost always costive in attacks of early and acute gout; and the functions of the whole of the mucous tissue are probably more or less deranged in most of these cases. The feculent discharges are often unmixed, the mucus being viscid, and the remains or waste of the ingesta in detached and minute fragments.

Pain and irritation of the bowels are seldom attendant on an acute fit, but are not unusually met with in chronic gout. The degree of irritation, which the passing of the morbid acid secretion along the small intestines may be supposed to cause, and the uncomfortable feelings and the flatulence so evidently referable to an irritated state of the colon, are among the most common attendants on the gouty habit, although not often sufficiently marked to form a prominent feature in an attack of the disease. And indeed these, in common with many other sources of discomfort and complaint in confirmed gout cases, during the intervals between the attacks, are usually relieved on the invasion of a paroxysm of the disease. This is probably due to the momentum of the blood

being directed to the inflamed tissue, rather than to the mere overpowering of a less, by a greater amount of irritation.

The functions of the kidneys are much deranged in a large majority of gout cases, and more deranged than they are usually found to be in other disorders, which are attended with the same amount of constitutional disturbance. The quantity of urine that is secreted is generally much diminished when gouty inflammation is at its height, but this differs little from what is noticed in other diseases which are accompanied with the same amount of febrile excitement;—the colour of the urine secreted under these circumstances is deepened, and its specific gravity is increased, but this is perhaps no more, or does not greatly differ, from what is observed in other diseases that involve the same degree of general excitement, or than might be referred to the diminution in the quantity of the secretion, and the disordered and sluggish action of the liver and mucous membranes, that so frequently attend these cases;—the urine often contains much mucus, and throws down, on cooling, large quantities of its salts, as the paroxysm of gout declines, but this is frequently observed on the subsidence of other febrile disorders;—when the powers of the system have been much reduced by gouty inflammation and its consequences, the urine often undergoes great chemical changes, but these changes in the urine are met with in the case of other diseases, that equally expend the constitutional powers;—

and these, and such as these, several proofs of derangement in the functions of the kidneys, including an albuminous condition of the urine, can only be regarded as being among the common, or the occasional, consequences of gout, and not as being among the peculiar features or effects of the disease.

But the general tendency to redundant acidity of the urine, bearing little relation in its degree or its frequency to the amount, or even the existence, of inflammatory or febrile action, but characterising habitually a large proportion of gout cases, is by no means common to many diseases, and attends very few diseases to the same extent. It is theoretically and practically of much importance.

It is not improbable, that the effect of gouty inflammation upon all the organs of excretion, is not only to derange their action, and to lessen the amount of their secretions, but to surcharge those secretions with crystallisable materials. This tendency is evidenced in the case of the kidneys, and is most probable in that of the skin, the liver, the stomach, and the mucous membranes. These salts are probably different in different organs, being, perhaps, in general, an increase in the quantity of the salt which is normally eliminated by the organ when in a healthy, or when, from any other cause, in a deranged state. This tendency is, perhaps, common to gout, and the other diseases which depend on a plethoric condition of system; and in which the blood is, therefore, largely charged with

organised, and probably with crystallisable materials.

The urine being naturally acidified by lithate of ammonia, this may become excessive, and form a deposition on the cooling of the urine; or it may become still more excessive than this, and cause the urine to be turbid when passed and still warm; or the throwing off of the lithic acid may be greater than the ammonia can even partially neutralise, and lithic acid may be passed in the urine. It would appear, that the normal quantity of lithic acid secreted from the kidneys in a state of health—a fraction more than eight grains (8·1.) in the twenty-four hours—would be rendered soluble by four fifths of a grain (0·82.) of ammonia; and that the 8·92 grains of lithate of ammonia thus formed would be soluble in less than half a pint of water, or about a fourth of the quantity of the urine separated from the blood by the kidneys in that time. The extreme insolubility of lithic acid, requiring, according to Dr. Prout, no less than 10,000 times its own weight of water for its solution, which would make the multiplication of the whole weight of urine by four necessary to dissolve it, renders the importance of the alkaline combination very evident, adding so greatly as this does to its solubility: the lithic acid that is soluble in half a pint of urine when combined with ammonia would not, according to this, be soluble in less than a gallon, were it not combined with alkali. Dr. Golding Bird suggests, as the probable mode in which lithic acid exists in

healthy urine, that "Uric (lithic) acid at the moment of separation from the blood, meets the double phosphate of soda and ammonia, derived from the food, and forms urate of ammonia, evolving phosphoric acid, which thus produces the natural acid reaction of the urine. If the whole bulk of the urine be to the urate of ammonia formed, not less than about 2,700 to 1, the secretion will, at the ordinary temperature of the air, remain clear, but if the bulk of fluid be less, an amorphous deposit of the urate will occur. On the other hand, if an excess of uric acid be separated by the kidneys, it will act on the phosphate of soda of the double salt, and hence, on cooling, the urine will deposit a crystalline sediment of uric acid sand, very probably mixed with amorphous urate of ammonia, the latter usually forming a layer above the crystals, which always sink to the bottom of the vessel." Supposing that the lithic acid is not in excess, nor the lithate of ammonia, and that the urine is clear on being passed, although probably somewhat deeply tinted, urea, the principal solid ingredient in the urine may be in excess, and show by so much the undue amount of nitrogen the system has to eliminate. In the quantity of urine passed in the twenty-four hours, which would in health contain 8·1. grains of lithic acid, there would be no less than 255 grains of urea. In certain circumstances, this necessarily large quantity may be probably increased nearly four times. The proportion of urea is greatest during the active years of middle life, and very sen-

sibly diminishes as old age advances; as it would seem, in extreme age, even to the extent of not reaching a third of the proportion of middle life. The proportion is considerably less too in women than in men, and less in young children. The composition of urea and ammonia being very nearly the same—so nearly, that by abstracting two atoms of water, or two atoms of oxygen and two atoms of hydrogen, from carbonate of ammonia, the elementary constitution of urea is left—urine readily becomes ammoniacal after it is passed, and decomposition has begun; and the quickness with which this takes place is increased by the presence of mucus, which seems to act as a ferment; this being one cause of the very different degrees of quickness with which urine becomes decomposed, and emits the ammoniacal odour after it is passed, and one reason why irritation or inflammation of the bladder, with necessarily increased secretion of mucus from its lining membrane, is so frequently attended by alkalescence of the urine. But it is more than probable that alkaline urine, when it is not a merely evanescent morbid indication, or not dependent on mucus, or on negligence in emptying the bladder at the proper time, or on some degree of vesical irritation, is the direct consequence of deficiency of nervous power, and an insufficient supply of vital influence to the kidneys for the due and normal performance of their functions; and by so much is alkaline urine an important, and sometimes a very serious and alarming, symptom of a

case. Besides urea and lithic acid, urine contains, as an important and essential part of its composition, certain earthy salts, compounds of phosphoric acid; of which about six grains and a half are thrown off by the kidneys every twenty-four hours; the acid being combined with soda, ammonia, lime, and magnesia. These earthy salts are chiefly held in solution by the prevailing acidity of the urine, and are little soluble otherwise; and if, from any cause, the proportion of acidity falls below a certain point, even although the urine be still somewhat acid, then earthy salts are necessarily precipitated, and by so much indicate that the urine is less acid than it should be. Urine may deposit its earthy salts, and, nevertheless, be slightly acid at the time of emission; in general, such urine very readily undergoes ammoniacal degeneration, and ceases to be acid soon after its emission. The triple phosphate, or ammonio-phosphate of magnesia, is a neutral salt; but under circumstances of greater aggravation, a salt having an excess of base, and called the basic phosphate, is deposited. The basic phosphate is necessarily not found when the urine is in any degree acid, however slightly so, at the time of its emission. Phosphate of lime is often mixed with the neutral phosphatic salts, and always with the basic phosphates. The phosphates sometimes fall to the bottom of the urine, as a white crystalline gravel; sometimes when there is little of the triple phosphate present, it collects on the surface of the urine, forming a pellicle, that has a

soapy look, and refracts the rays of light; and sometimes the phosphates form a thick cloud, looking something like mucus, or in denser but still floating masses near the bottom of the vessel. They will be readily distinguished from mucus by their solubility in muriatic acid. Phosphatic urine is, perhaps, usually pale, in abundant quantity, and of low specific gravity, when the condition is not evanescent; but, and this is more usual in gout cases, when this state alternates with the deposition of the lithates from the urine, the fluid is more generally of high specific gravity, consequently containing an excess of urea. When there is disease of the bladder, or calculous irritation, the urine may become brown and foetid, and, it is said, be loaded with large crystals of the triple phosphates and the phosphate of lime, entangled in the mucus which such urine must be charged with. For interesting delineations of the microscopic appearances of the urinary deposits, the reader is referred to Dr. Bird's interesting and practical work on urinary deposits.*

But the action of the kidneys is not always affected, even in acute cases of gout, nor by any means necessarily in the gouty habit of body.

* The urinometer furnishes us with a very ready means of ascertaining the specific gravity of the urine. It is usually important, that the specific gravity of the urine passed on going to bed (*urina cibi*), and that passed on first rising in the morning (*urina sanguinis*), should be taken and compared; and it is sometimes requisite, that this should be compared with the weight or bulk of the whole urine passed in the twenty-four hours, in order to estimate the quantity of solid matter thrown off by the kidneys.

In some of the worst cases of gout that I have met with, the urine has never been deranged, in quantity or character, either during or between the paroxysms. But in such cases it has been invariably true, that some other organ has suffered in the direct proportion that the kidneys have been exempted from derangement. In these cases, the hepatic functions have generally been much affected, and have been peculiarly subject to derangement; or the heart, or the skin, has been especially liable to be disordered.

But, in a large majority of cases of acute gout, the urine is much deranged. Usually, it is more or less highly coloured before the invasion of the paroxysm, and deposits a red sediment on cooling; during the severity of the attack, it generally becomes scanty, and often pale and clear; it is increased in quantity, and deepened in colour, as the fit declines; and, towards the close of the attack, it deposits a copious sediment. The sediment may consist chiefly of the lithates of ammonia and soda, or of phosphate of lime. In an immense majority of cases, the deposition consists, at least in the first instance, of the compounds of lithic acid. The phosphatic deposition is not often found until after the deposition of lithates has continued for some time, and the general health and strength have suffered, in a greater or less degree, from the continuance of the morbid action.

The red deposit consists chiefly of lithic acid. This is known to be no unfrequent result of confinement to bed, or deficient exercise, or the habitual use

of an undue quantity of animal food, or the excessive use of stimulants, or excessive perspiration, or intense mental application. Some of these conditions may co-operate with the gouty paroxysm in occasioning the deposit. As has been said, this deposit frequently occurs on the decline of febrile and inflammatory affections; and this must increase the tendency to urinary derangement that attends the gouty paroxysm, but does not explain the degree to which this tendency distinguishes most gouty habits in the absence of the paroxysm, nor the increase of this tendency as gout becomes confirmed, and often in the direct proportion that it loses somewhat of its acute inflammatory character, and becomes chronic and irregular.

The lithic acid is chiefly in combination with ammonia, and the colour is owing to the presence of a small proportion of the purpurates of ammonia and soda; the proportion of purpurates of ammonia being greater as the red passes into the pink colour.*

The white deposit, consisting almost always of phosphate of lime, with a small proportion of phosphate of magnesia, is likewise by no means confined to gout cases, but is frequently noticed under very different circumstances, and in cases in which there is no probable trace of gout, such as after injury of the back, or even after great fatigue. †

* See Dr. Prout's most valuable work "On the Nature and Treatment of Stomach and Urinary Diseases."

† Dr. Prout says, and we believe most justly, that cases of phosphatic urine are rarely original, the case beginning with lithic acid urine; and this, probably by irritating the bladder, leads to the phosphatic state. The

It may be, that the connection between gout and urinary derangements is less interesting, and less important, than might at first be supposed. All the great emulging organs are liable to be deranged by gout, and the kidneys among the rest; and these

exceptions to this may probably be cases of special injury, &c., but we think are very rarely indeed gout cases; and the phosphatic urine in gout cases is often, when unconnected with marked inflammation or irritability of the bladder, a very short-lived symptom, speedily resulting in the return of lithic acid urine. Whatever much exhausts the powers of the system, as anxiety, loss of sleep, great fatigue, or habits of undue mental toil, may induce this very abnormal and serious condition of the urine, which is to be promptly attended to by the mineral acids or other tonics, sometimes most importantly aided by the moderate use of opium; and of course, under such circumstances, any medicine of debilitating tendency, as mercury, colchicum, saline purgatives, and the like, are to be discontinued or avoided. It is said, that this state of the urine may be induced by undue and long-continued use of alkalies, and it seems too likely to be questioned; but it is believed, that it very seldom occurs under these circumstances. There is a risk from the long-continued or unwise use of soda, that it may cause the formation of lithate of soda in the urine, which would be risking the formation of gravel, and perhaps of calculus. In all cases, when alkalies are used much, or long, both patient and medical man should be provided with some litmus paper, to test the urine occasionally. A strongly odorous urine, with marked tendency to putrescence, should direct especial attention to the importance of using the test. Healthy urine is necessarily somewhat acid; the earthy bases not being absolutely neutralised. From Dr. Golding Bird's work, we gather some excellent observations on another condition of the urine; viz., that which contains oxalate of lime. This is a very important condition, inasmuch as it is not indicated by any deposition from the urine. It may, or may not, be allied to, or be the commencement, if unchecked, of saccharine degeneration of the urine; it is however evidently and intimately connected with dyspepsia, and predisposed to by whatever greatly weakens, and induces a debile, and mobile, or irritable state of the général system. It may, or may not, be often present in gouty cases; but it is a question that deserves investigation, especially in cases of great morbid irritability, coupled with dyspepsia, and an atonic state. It seems to be evidently the result of derangement in the primary assimilation of the ingesta. Dr. Golding Bird makes the startling announcement, that he finds this state of the urine to be more common in London than the phosphatic urine. Dr. Bird's book should be in the hands of every medical man.

latter may have attracted an unfair degree of attention, from the facility of observing their deranged states, that is afforded by noting the colour, the density, and the comparative clearness or turbidity of the urine. As has been said, urinary derangements must not be uniformly looked for in gout cases; and they must not, if taken alone, be trusted to, in the great questions of treatment and prognosis. A fit of gout may be unattended with any appreciable change in the urine; or it may pass off without the occurrence of any observable deposition from it upon its cooling; or, on the other hand, it occasionally occurs, that the fit is preceded by the urine precipitating copious deposits, and by this condition continuing throughout the attack, and lasting for some time after it has entirely passed away. As to the treatment of gout, it will be found that the condition of the urine, judged of *per se*, has little to do in regulating or modifying it, however valuable it may sometimes be when looked upon as subsidiary to other indications of treatment. In general, when thus connected with other symptoms, a careful and regular observation of the state of the urine is of much practical importance in the prognosis, as well as in the treatment. For example: unless in particular cases, the scantiness of the urine, and its continued clearness, during a paroxysm of gout, will help to mark the severity of the attack, and to show that it will be of long duration, unless it be thought prudent to check or to modify it, by the interference of medicine; and the commencement of urinary

deposition often helps to indicate the actual decline, or the probably near approach of the decline, of the attack.

The excretion of the skin is seldom diminished, but, on the contrary, is usually much increased, in an attack of gout. The perspiration, however, is seldom general, or in equal degree from the whole surface of the body; and it is probably more or less deranged in its character in all cases. Some writers have asserted, that the secretion has always an earthy smell, and others that it is always decidedly acid. Neither of these statements is borne out by facts. On the contrary, the earthy odour must be of singularly rare occurrence. Patients have occasionally stated that they themselves have been able to perceive this odour; but even this has been rare. It may probably be sometimes met with, although very rarely, to such a degree as to be cognisable by a second person. The acid character ascribed to gouty perspiration I believe to be much more common; although I think that this only occurs in a minority of cases. The perspiration is often odorous and strongly saline, and is perhaps never in a healthy state, during the paroxysm.

The state of the nervous system in an attack of acute gout, however intimately dependent on the excited and deranged state of the circulation, is not wholly referable to it. The previously disordered condition of the stomach, &c., so commonly observed,—and the necessarily long pre-existing derangement in the action of the capillaries, if not in

the constitution of the blood,—and the degree to which these must expend the nervous power, must be taken into consideration, before the condition of the nervous system of persons attacked by gout can be fairly estimated. To this must be added, the probable cost of nervous power which attends the localisation of the disease; and to this, the great pain which attends acute inflammation of the fibrous tissue, and the rapid and great expenditure of nervous power that great pain occasions. These causes may have much effect in producing the irritability and mobility of nervous system, which so strongly characterise an attack of gout. To these may probably be added, the effects of the much deranged state of the various secreting organs, so usually attendant on a paroxysm of gout, and the irritation of the organic nerves that may be supposed to result from it, and to aid in expending the powers of the nervous system. Unquestionably, the great irritation of the nervous system, and the rapid exhaustion of nervous power, are in general sufficiently observable in cases of gouty inflammation, and modify much the course and the treatment of the disease—protracting the morbid action, and rendering the system less able to bear active treatment. And this state of the nervous system must be increased greatly by the loss of sleep, which is sometimes added to the other evils that a fit of gout brings along with it, or by the much disturbed and imperfect sleep, that almost always attends these cases. In advanced gout, the rapid and great depres-

sion of nervous power, that is produced by an attack, usually becomes still more important. In chronic, imperfectly developed, and wandering gout, the derangement of the nervous system gives rise to very important consequences — greatly adding to the patient's sufferings, depressing his mental powers, and increasing the functional derangements. The interrupted sleep, the harassing dreams, the despondency, the morbid sensitiveness of mind and body, are so many of the effects of diminished power, or deranged functions, of the nervous system.

It will have been gathered from these statements, that the nervous and vascular systems, and consequently the various organs of secretion, including the mucous membranes and the skin, are severally more or less deranged during the gouty paroxysm. This derangement re-acts upon the gouty paroxysm, and aggravates the attack.

The gouty paroxysm, for which the preparations will have been in progress so long, and been made so assiduously, is almost always the least evil that can befall the case, when the localisation of the disease has been even partially accomplished. The acute paroxysm is, in most cases, the most desirable form of gout. In from three to eight or ten days, the constitutional irritation, and the sluggish, or the deranged state of the great organs, will have passed away; the acute pain, the redness, the morbid heat, and the tension of the affected part will have disappeared—the surface of the part continuing to be more or less swelled, and morbidly sensitive, for

some time longer, and assuming a blanched and pasty appearance from the œdema of the cellular tissue. In a short time, this, in its turn, disappears; and the part regains its natural appearance; the system recovers its natural elasticity; the equilibrium of the circulation is restored; the organs act well and healthily; the economy has been evidently relieved by the attack, from some morbid agent; the individual is more disposed to active exertion of mind and body, is more cheerful, and eats, drinks, and sleeps better, and thinks more regularly and well, than he had probably done for some time before the attack. And this, notwithstanding the agony that attends such an attack, and the constitutional derangement which is necessarily occasioned by it, is, on every account, the most desirable form in which gout can show itself. The attack runs its course rapidly and completely, and is less liable to leave behind it a disordered state of any of the larger and more important organs, or disorganization of the tissue that has been affected with the local inflammation.

It is perhaps doubtful, however, whether the tissue that has been the seat of gouty inflammation ever wholly regains its natural state; and it is not until after a considerable length of time, that the local effects of gout, even when the attack has been of acute character and short duration, are as far removed as they are susceptible of being.

It may probably be said to be an invariable consequence of gouty inflammation, that crystallisable

matter is deposited in the affected tissue ; and this complicates the ordinary consequences of inflammation, protracting, if not preventing, the restoration of the tissue to its original state. The affected tissue is not only left in a relaxed state on the subsidence of the inflammatory and irritative action, the vessels having temporarily lost much of their vital tonicity—being less elastic, or having less contractile power, and being liable to have their functions influenced by less powerful causes of derangement ; but a morbid material is deposited in the tissue, which may become a mechanical irritant, and must, under any circumstances, be a mechanical hindrance to the full restoration of the functions of the part.

In many people, with care, and in some people, in whom the gouty habit is not strongly developed, almost without care, this, the acute form of gout, named likewise, from its defined course, and the determinate localisation of the attendant inflammation, regular gout, may continue, throughout life, to be the only form of the disease ; and, in nearly all cases, it is the form in which gout shows itself, in the first instance, and perhaps in several of the earlier attacks. And by such an attack, the system is so entirely relieved from the morbid influence which is the proximate cause of gout, that another attack seldom occurs until after an interval of six or twelve months ; and the more rapidly the attack runs its course, and the more quickly the local and general irritation subside, and the part affected

regains its natural size and appearance, and loses its morbid sensibility, the more completely, in most cases, will the system be found to have been relieved by the attack, and the longer, other things being equal, may the interval between that and the next attack be expected to be. Acute gout may be simple, or duplicate: that is, attended by inflammation of a single joint, or of more joints than one. It is very seldom that acute gout involves more than one joint in inflammatory action during the first attack; but the liability to duplicate gout becomes greater in every succeeding attack. Duplicate gout is, however, usually the consequence of the attack having been delayed, and of the system having become surcharged with whatever is the cause of gouty irritation. Whenever duplicate gout occurs, a long and severe attack may be generally expected. The inflammation of simple gout is confined, with few exceptions, to the joints of the toes, or, although in such cases these are much less frequently the seats of gouty inflammation, of the fingers. Duplicate gout frequently involves inflammation of one or more of the larger joints. As the system becomes more and more victimised to the disease, the liability of several joints to be affected, at the same time, is much increased, and the liability of the larger joints to be affected is increased in the same proportion. The acute form of duplicate gout is necessarily the most severe and painful form of the disease, and the one which involves the greatest degree of attendant febrile action. In cases where

the predisposition to the disease is strong, and the fit has been delayed, it is often very doubtful whether the gout will become duplicate, or show itself only in an imperfectly localised inflammatory action, the seat of which is frequently changed, the degree of inflammation, perhaps, perpetually varying from acute to chronic, the inflammation, perhaps, disappearing altogether, frequently to re-appear at longer or shorter intervals,—or the inflammation be manifested in some deep-seated tissue, and not involve any of the joints, the course of the attack being indefinite, as to effects and duration. This form of the disease is aptly distinguished by the term, irregular gout.

Gouty inflammation is liable to metastasis; and this is one of the most striking of the numerous proofs of the constitutional character of the disease. Metastasis is a very common feature of gouty inflammation; and it is of much practical importance. When the inflammation of a joint subsides, more or less suddenly, but nevertheless much more rapidly than it is ever found to subside on the decline of the attack, and, instead of re-appearing in some other joint, this is followed by a marked and severe shock to the nervous system, evidenced by sudden and great depression of the circulation, this being succeeded by much disturbance of some great internal organ, the gout is said to be retrocedent. There is always more or less risk of this, which is the most alarming and imminently dangerous form of gout, when the disease exhibits a decided ten-

dency to migrate from one part to another; and the risk of retrocession is particularly great, when the patient is enfeebled, whether from previous disease, or from the long continuance of gouty action, or from advanced age, or from almost any conceivable cause. In the young and the vigorous, gouty inflammation has not, by any means, so alarming a tendency to become retrocedent; but, even in such cases, it does occasionally occur; and a strong disposition, in gouty inflammation, to migrate from part to part, should be always looked upon with jealous, and somewhat anxious, watchfulness. Indeed the metastasis of gouty inflammation is always a more or less strong indication of failing, or deficient power. It will be found, that cases, in which the inflammation is of migrating character, will not bear such active treatment as other gout cases; in protracted cases, it commonly indicates the near approach of the time, when medicines, &c., the reverse of lowering, must be had recourse to; and, in recent cases, that the treatment should be more cautious and less active, than might otherwise be ordered or considered necessary. But this is anticipating.

The metastasis of gouty inflammation, although generally effected very quickly, is seldom so sudden and complete as the word would imply. The inflammation rapidly subsides in the part primarily affected, but it seldom disappears suddenly; and the part usually continues to be swelled, and morbidly sensitive, for some little time afterwards. The

metastasis of gouty inflammation may probably be looked upon, in a large majority of cases, as a single or a first step towards the irregular form of the disease. Metastasis is comparatively rare in early gout; and it is rare when the attack begins suddenly, is attended by acute inflammation, and runs its course rapidly. The more gradual the onset of the fit, and the less acute its character, and the greater the number and the frequency of the fits, the stronger is the probability of metastasis. If the system be full of power, and surcharged with goutiness, there is a greater likelihood that the inflammation will involve several parts at the same time, than that it will migrate from part to part, or at least until the attack has gone through a portion of its course, and the system become somewhat enfeebled by it. Metastasis can never be a desirable circumstance, and must always occasion some degree of anxiety. It may be very often traced to the repression of gouty inflammation, by the exposure of the affected part to cold, or by the improper use of local applications.

Gouty inflammation is generally more troublesome and protracted, the larger the internal surface of the joint that is its seat; and the nearer the joint is to the trunk of the body, the greater appears to be the risk of retrocedent gout; and, in both these cases, the more severe will be the effect of the attack on the constitution, the more frequently may the subsequent fits be expected to occur, and the more severe will they be, or other-

wise the larger will be the amount of irregular gout.

Acute gout, whether simple or duplicate, and whether migrating or not, seldom involves any parts in the inflammatory action but the small and large joints of the extremities; and the following seems to be the relative frequency with which these are severally affected:—phalangeal joints—metatarsal and metacarpal joints—wrist joints—knee joints—elbow joints—hip, shoulder, and ankle joints. There is, perhaps, hardly a fibrous tissue in the body which has not occasionally been found to be affected with gouty inflammation; but it is to the irregular form of the disease, that this very extensive influence is almost exclusively confined.

The smaller joints of the toes are much more liable to be attacked with gout, and more particularly with early and acute gout, than those of the fingers; but in confirmed gout cases and chronic cases, when deposition has taken place, the finger joints are usually much more the seats of deposition than the joints of the toes. This is observable in cases of articular rheumatism as well as in gout cases; and the fact may probably be ascribed to the greater exposure of the hands than the feet, the latter being cased in shoes and stockings, the former necessarily much exposed. The repressing effects of cold air on localised gout, rendering the gouty action less active, and more liable to occasion deposition, is well known. The much greater use of the joints

of the fingers than of the toes necessarily adds to the risk of such deposition taking place. The exposure to cold, together with the necessarily sluggish action of the vessels, may serve to explain the deposition of the lithates in the cellular tissue of the external ears, &c., which is occasionally seen in confirmed gout cases, that are attended with much deposition. This seems to be hardly the result of specific inflammation, but rather owing to the escape of the chalky matter from the vessels, the system being surcharged with the lithic acid condition.

The pain which attends gouty inflammation appears to be much influenced by the extent of surface presented by the joint affected. At least, this seems to afford the only explanation of the facts, to which the exceptions are very few, that gouty inflammation of the knee is usually more painful than that in the elbow, and this than gout in the hip, and this than gout in the wrist or ankle.

The degree of pain that is suffered from gouty inflammation likewise depends much upon the quickness, and the degree in which the cellular tissue and the skin covering the affected part participate in the inflammatory action. Supposing the case to be one of acute gout, the more hot and red the skin, and the more quickly and considerably the part is swelled, other things being equal, the less painful is the attack, in most instances. When the inflammation is acute, and the surface pale and not swelled, the pain is almost always frightfully severe.

Retrocedent gout is of much practical importance ; and yet little that is satisfactory can be said as to the pathological changes on which its primary phenomena depend. The symptoms, however, are, in almost all cases, sufficiently well marked : the nervous system sustains an evident shock, and the circulation is much disturbed ; the action of the heart is oppressed, and is either irregularly or imperfectly performed ; the respiration is disturbed and rendered irregular, either directly through the nervous system, or indirectly from the derangement of the heart's action. In some cases, a severe spasmodic condition of the diaphragm, or of some structure in the precordial region, takes precedence of the other symptoms by the agony which attends it, and by its influence on the respiration. The primary shock to the nervous system which attends the retrocession of gouty inflammation may be more or less severe, and of longer or shorter duration, but is seldom wholly wanting ; and this is followed by re-action, which is commonly accompanied by inflammatory action of some of the great organs.

If the migration of gouty inflammation from one joint to another be an indirect proof of deficient power, retrocedent gout is still more so. The degree and effect of the shock, and its duration, the natural and the remaining strength of the system, the age and the habits of life, the organ which may be affected, and the degree to which it may be affected, must all be considered in forming a prognosis.

The name, retrocedent gout, seems, however, to

involve theoretical opinions regarding the nature of the affection, that are not always or wholly justifiable. The derangement of the general system, and of some important viscus, sometimes precedes the sudden or rapid subsidence of the gouty inflammation of the joints; and it is by no means certain, that, in all cases of the sudden subsidence of gouty inflammation of a joint, or other less essentially vital part, in which internal derangement immediately follows, this derangement is of inflammatory character; although we know that it is so in a very large majority of cases. But in some cases, there can be no reasonable doubt, that the internal derangement, the shock, the disturbed circulation, the re-action, and the localised inflammation of some one or more of the vital organs, are the immediate consequences of the rapid subsidence of the more external inflammation; and not only so, but that the inflammation is very frequently, and indeed in most cases, different from the ordinary inflammation of those organs, and partakes altogether so much of the peculiar character of gouty inflammation—allowing for the different symptoms which would necessarily attend inflammation of the same character when affecting a viscus, and when affecting a dense fibrous tissue—as to lead to the inference, that the inflammation is equally, in both cases, of gouty character. If, however, it be borne in mind, that the name, retrocedent gout, embraces all the cases in which gouty inflammation of the more external tissues rapidly subsides, and is immediately

followed or preceded by derangement of the nervous and vascular systems, and by disorder of some of the more important viscera, which may, or may not, be of inflammatory character, there seems to be no reason why the name, retrocedent gout, sanctioned as it is by long usage, and truly expressive as we believe it to be in most cases, should not be retained.

In a case of retrocedent gout, any diminution of general power, any indication that the nervous system is becoming more and more disturbed, must be looked upon with much anxiety. The super-vention of delirium or of coma, of hiccup, of subsultus, the suppression of the urine, the occurrence of partial perspiration, the countenance assuming the nipped and dark and rigid character so indicative of nervous prostration, increasing irregularity of the respiration, diminishing impulse of the heart's action, and a more indistinct and irregular and feeble pulse at the wrist, are among the worst symptoms which can present themselves, and the most common precursors of a fatal termination of the case, whatever organ may have been the especial seat of the inflammatory or irritative action. On the other hand, the re-appearance of the external inflammation, either in its previous site, or in some other joint, is the most favourable circumstance which can occur, and the only one that can materially relieve the anxiety respecting the issue of the case, however favourably it may appear to be going on. The external re-appearance of the inflammation

is the strongest and most satisfactory proof, that the nervous system has sustained the shock without injury, and the powers of the system been equal to the enemy they have had to cope with; and its immediate result, in almost every case, is the subsidence of all the symptoms of internal disturbance, whether inflammatory or otherwise.

If the gouty paroxysm is fairly dealt with, and neither improperly repressed, nor attempted to be cut short,—if, at the same time, the constitutional powers are not needlessly weakened by treatment, nor the disease permitted to run riot by non-interference,—if the disease is neither encouraged nor repressed by topical applications, especially the latter,—and, in fact, if common care is exercised, retrocedent gout is of rare occurrence, unless under peculiar circumstances, as in cases involving much and unavoidable debility, and accompanied by much gouty diathesis. But, nevertheless, retrocedent gout occurs so often, and an attack is threatened so much more frequently, as to make it important that the practitioner's mind should be kept on the alert, as to the possibility of such an event.

There are two other varieties, or rather degrees, of localised gout to be briefly noticed. The one is active,—the other, chronic gout. As gout is less acute in its character, it is less paroxysmal in its attacks, less determinate in its course, and less definite in its duration. As gout attacks occur more and more frequently in individual cases, the disease is apt to degenerate into one or the other of

these minor degrees; and very frequently, the paroxysms, making their appearance gradually instead of suddenly, and running a course of very uncertain, and probably long duration, terminate in the chronic form of the disease, instead of in a restoration to health; and the paroxysms of active, or even of acute gout, in cases where the diathesis is strong, often come to be connected together by the chronic form of the disease. This only differs from irregular gout in the localisation of the inflammatory action in one or more of the joints, and in the occurrence at occasional, although it may be uncertain intervals, of distinct, although, perhaps, slow and lingering, paroxysms of the disease. But the gradual passing of the acute into the active, or of this into the chronic, or of this into the irregular form of gout, and the occasional return of the disease to its more natural character, or the occasional supervention of acute, or active, or even chronic gout, upon cases which had never exhibited any but the irregular form of gout, ring, in actual practice, a perpetual and unending succession of changes, making gout cases partake, in the worst and oldest instances, less distinctly of any one form of the disease, to the exclusion of the others, than might have been looked for.

Irregular gout is, perhaps, the most interesting form of the disease, and includes all its shades and degrees and modifications that are not attended by the inflammation in the joints, from slight and only occasional gout pains, to gouty inflammation

of the sheath of a nerve, of the eye, or of the periosteum. Irregular gout depends upon inadequate expenditure of the morbid cause of gout. Irregular gout is the form into which the other forms of the disease often lapse, when the diathesis is strong, and the powers of the system are feeble : or when the system is not sufficiently vigorous to develop strongly the morbid action, and to localise it in the joints, it is the form in which gout first presents itself, and in which it may continue for years, or even during life. In females, who have derived the remote cause of gout from their parents, and perhaps added to the predisposition by sedentary habits, or in whom it is much modified by a highly sensitive organisation, or in whom it is only at length evidenced by the additional influence of the smaller and lessening expenditure that attends the declining years of life, irregular and chronic gout frequently occur ; usually beginning with the irregular form of the disease, and gradually sliding into chronic gout, with few active, and, perhaps, no acute symptoms, of either constitutional, or local disturbance.

The cessation of the catamenial periods greatly influences these cases. Irregular gout is often met with in females during the earlier years of womanhood, being then complicated very frequently with hysteria, and often with well-marked cachexia. These form a most interesting class of cases, the just diagnosis of which is often of very great importance. Hereditary influence has always been

traceable ; and in general the gouty habit has been manifested in more than one previous generation of the family. In these cases, it is very rare to find that the irregular form of gout has passed into the chronic form of the disease, until after the cessation of the catamenial periods ; and usually during the ten or twelve years preceding this change, the gouty symptoms will be found to have passed away, or to have declined very greatly in their degree, to reappear thereafter in the chronic form.

The effect of sex on all the diseases of the fibrous tissues—and especially, of course, on gout and rheumatism—is very interesting and very important. It is unquestionable, that many cases of seeming rheumatism are only sympathetic affections—an irritative condition of joints or fibrous tissue—dependent on uterine derangements, and only removeable by such means as relieve the derangement of the uterine functions, the two conditions subsiding together, and *pari passu*. Such cases are of very frequent occurrence in young and delicate females,—and by no means seldom met with in connection with the time of life, when the catamenia cease or have begun to diminish, or the catamenial periods have become less regular ; on the other hand, true rheumatism often involves much uterine derangement ; and in every way the connection between the uterus and the diseases of the fibrous tissues is close and interesting. This is strongly shown by some of the reports on that awful disease,

puerperal fever, in which the disease has, in the first instance, simulated, and indeed been mistaken for, an attack of acute rheumatism. It is not the case, that uterine derangements influence gout to the same degree that they influence rheumatism; nor do we believe, that they can produce such a condition as might be mistaken for gout. The connection between rheumatism and the uterus is probably as much closer than that between gout and the uterus, as is the connection between rheumatism and the heart; but in neither case is the connection, whether greater or less, to be lost sight of. It is certainly and sufficiently manifested in the goutiness of hysterical young women who inherit the gouty predisposition, in the marked increase and diminution of the gouty manifestations, as the catameniaë are irregular or otherwise; and it is certainly one reason, although not the only one, why chronic or irregular gout so often either makes its first appearance, or is materially aggravated, on the cessation or approaching cessation of the catameniaë. Yet even after this period has passed, it is probable that the uterus at times influences the gouty condition, and that any cause which renders it less dormant or torpid may, and probably will, add to the gouty irritation: how far the connection between the uterus and gout, or rheumatism, and other arthritic diseases, may be explicable from having their common seat in the fibrous texture,—or from the great influence of the uterus on the whole economy in health or disease,—or whether it may admit of some chemical ex-

planation, and be attributable to the state of the blood itself, acting and re-acting in either case on the uterus and on the arthritic condition, are necessarily matters of doubt. It is certainly curious to find, that a disease such as glanders, in which a marked morbid poison is introduced into the blood, produces such notable irritation in the fibrous tissues, as to make a case of glanders be mistakeable in the first instance for one of rheumatism,* and curious to find, that the poison of the gonorrheal virus sets up a kind of fibrous irritation—in many respects, indeed, peculiar, and different from other forms of rheumatism,—a disordered state that is apt to be very obstinate, and sometimes very severe; and that the poison of syphilis, among its secondary effects, has a form of fibrous irritation affecting the periosteum, which is usually sufficiently peculiar, and yet has so many characters in common with the rheumatic affection of the periosteum that is independent of any morbid poison, as to be properly classed with it. It is interesting to find, that any such alterations in the character of the blood influence arthritic affections so much,—corroborating, as these facts do, the humoral pathology of these diseases.

In irregular gout, the irritation is not localised in a tissue in which the morbid cause can be adequately expended; and the irritation continues, it may be with exacerbations and remissions; and the irritation re-acts upon the various organic pro-

* Dr. Williams on Morbid Poisons.

cesses, increasing the derangements of the several functions, and adding to the general debility. The stronger the predisposition, the greater the probability of acute gout; and the more feeble the system, the stronger the likelihood that the gout will be irregular. Therefore, if the predisposition should increase, and circumstances favour the vigour of the system, or cease to interfere with or to take away from its vigour, irregular gout may pass into chronic, or active, or even acute gout. On the other hand, if the system loses power, and the development of a large amount of gouty action demands the expenditure of a large amount of constitutional strength, acute gout may pass into active, or chronic, or irregular gout. Or the powers of the system may not have diminished in any sensible degree,—the organic processes, and the mental and animal vigour may continue unimpaired,—and yet, the gouty diathesis increasing, the system may gradually become unable to free itself from the whole of the morbid cause, by an adequately severe paroxysm, and an adequately large amount of local inflammation; and thus the acute form of gout may gradually degenerate into the active, or chronic, or irregular form of the disease. But such a case is rare. If the gouty diathesis is strong and increasing, and if the paroxysms become in the same proportion more severe and more frequent, the constitutional powers must be largely expended, the time allowed for their restoration becomes shorter and shorter; and however great may have been the

original restorative energies of the constitution, those energies must gradually become weaker and weaker, and less and less able to support such expenditure. To do any real good to such cases, the efforts must be directed to lessen the amount of diathesis during the intervals between the fits, as well as to the treatment of the paroxysms themselves.

Irregular gout will be found to be generally connected with a feeble state of the system,—whether the want of power is evidenced in the first instance, in which case gout may never have appeared in any other form,—or whether the debility is only evidenced after there have been regular gout attacks. The last-mentioned are the cases in which the connexion of irregular gout with debility is generally most evident. But it would be too much to assume, that irregular gout is always found in connexion with debility of the system, although a large proportion of the instances in which it occurs must be said to be so. There are, however, many instances, in which the irregular form of the disease is owing to such causes, as would interfere with, or prevent, the localisation of gouty inflammation in the joints; such as disordered action of an important organ. In such cases, the gouty irritation often evidently and greatly adds to the morbid state of the affected organ; and cases sometimes appear to countenance the opinion, that it may directly induce such morbid action. In either case, gouty action may perhaps be said to appear in almost as many forms as there are different diseases, and to give rise to as many

symptoms as there are varieties of derangement. Under such circumstances, irregular gout may exist for years ; and, under cover of the morbid condition of some important organ, may be little suspected, unless, perhaps, from the known existence of hereditary influence ; until, at length, circumstances of improved power, or diminished morbid action, enable the gouty condition to be developed and localised.

As an introduction to the account of the local changes eventually produced by gouty inflammation, a sketch may be given of the kind of case in which such changes are found to be effected the most rapidly ; and this may serve to illustrate the character and progress of the generality of cases of irregular and chronic gout. These cases may vary in their character, but they eventually partake more of the chronic form of the disease than of any other. There may be dyspepsia, sluggishness of the liver, alternately oppressed and disturbed sleep, occasional violent jactitation of the limbs during sleep, great tendency to cramp in bed, and frequent exacerbation of uneasy feelings from two to five o'clock in the morning. The appetite, although probably somewhat variable, may be generally good ; the tongue loaded in the morning ; the spirits variable, but liable to sudden and great depression ; the temper irritable ; and the mental activity unaffected, unless at short and occasional intervals. The dyspepsia may be of capricious character, and may sometimes disap-

pear altogether for a longer or shorter time. The dyspeptic state may be marked by much flatulence and acidity, and by uneasy sensations during the digestion of the food; but the changes of the food in the stomach may probably be accomplished within the usual or natural time, or the stomach discharge its contents into the duodenum within the natural time, and the uneasy gastric sensations subside, and the appetite for food return, within a very few hours after a meal has been taken.* The secretions of the liver may be disordered or deficient. The bowels may be somewhat costive, and often require the assistance of aperient medicines. Such a case may have been gradually developed, after a paroxysm of gout had been checked, or inadequately manifested, or from the time when a fit of gout, which had become, from habit, almost a periodical necessity, did not occur; or it may have arisen in

* It is probable, however, that, in such cases, the functions of the stomach are by no means performed perfectly, although they may be performed quickly. An examination of the *faeces* may prove this. Crude or imperfectly assimilated food may be found mixed with the excretions in many of these cases. This may serve to account for the large appetite that may be often observed; a degree of appetite that may be quite beyond any ordinary proportion to the expenditure, or size, or increase of the system. And this may serve to explain the fact, that the amount of alvine evacuation in many gouty people is exceedingly large. Such symptoms as indicate irritation of the intestines generally, but perhaps especially of the colon,—uneasy feelings that evidently depend upon flatulence and acidity, which are generated in consequence of the irritation of the intestines, caused by the imperfectly assimilated alimentary or excrementitious mass,—such uneasy feelings occurring, moreover, at the time, when this mass is passing along the irritated portion of the bowels,—may lead to, but of course would not prove, an opinion, that the functions of the stomach are being inadequately performed.

a system, in which hereditary influence, or some of the other remote causes of gout exist. At length, after a longer or shorter time, local disturbance may manifest itself in one, or more frequently in several, of the joints; but perhaps only to such an extent as to cause uneasy feelings in the parts affected, the joint or joints being perhaps slightly swelled, and having some increase of their natural sensitiveness. The use of the parts affected—usually the smaller joints, at least in the first instance—may be slightly impaired. The pulse may be irritable, and perhaps somewhat quickened, the system somewhat feverish, and the sleep more or less disturbed. Such a case may continue, with little apparent change, for weeks, or even months, and be varied only by fluctuations of exacerbation and remission. The irregular form of gout will have passed into the chronic form of the disease. But this state may not be steadily persistent. The local inflammation may at times wholly pass away, or become so slight as to occasion little inconvenience; or it may be increased by any such cause as a slight error in diet, or the taking a very little more than the ordinary quantity of wine, or loss of sleep, or change of weather, or fatigue, or excitement of mind or of body. As the local inflammation is more or less manifested, the dyspeptic symptoms, &c., may be diminished or increased—the local and constitutional symptoms being aggravated by the decline, and relieved by the exacerbation, of one another. Such a condition may continue for years.

It may be interrupted, for a time, by an acute or active paroxysm of gout, followed, perhaps, by a degree of local and constitutional relief proportioned to the degree of the paroxysm, and the amount of gouty diathesis that may be supposed to exist. Or, the inflammation of the joints may subside, and derangement of some other part be substituted for it, with which it may alternate, the one being relieved by the re-appearance of the other. In all such cases, however, the result is, that the system becomes weaker, and the health more and more impaired, and the condition of the affected joints worse and worse. In the first instance, the joints of the toes and fingers may have been exclusively affected. By degrees, the larger joints may have become involved in the inflammation and its results. Those results are gradually increasing deposition, in the affected tissues, of a material, that, by degrees, assumes more and more of a specific character. In the first instance, the deposited matter is, perhaps, always mixed with a very large proportion of the common products of inflammation ; and so long as it is in a liquid state, the whole of the deposit, whether specific or otherwise, may be in a great degree absorbable. But, at length, a small part of the specific matter separates and concretes ; additions are made to it more or less slowly ; and by degrees it acquires consistence, and eventually becomes solid.

It should be understood, however, that such cases, although so commonly met with, bear, in

truth, a very small proportion to the whole number of gout cases; and the cases in which the amount of deposition is increased by successive additions to the thin pellicle originally deposited, until it forms masses of sufficient size to acquire the old and distinctive name of chalk-stones, constitute a still smaller proportion of gout cases. As has been said, the deposition is probably absorbed, at least to a great extent, in most cases,—the specific deposition being probably among the necessary and invariable consequences of gouty inflammation; and the deposition is comparatively seldom formed in sufficient quantity to form concretions of important and permanently injurious size, unless in cases of long standing and severe gout, that have exhibited more or less of the chronic form of the disease. It is believed that concretions are chiefly, although they are certainly not exclusively, the consequences of chronic gout,—that the specific deposition takes place in all cases of gouty inflammation, but that, so long as it continues to be dissolved or suspended in the fluid products of the inflammatory action, it may be absorbed, and restored to the circulation,—and that it is only when no longer held suspended in these fluids, but deposited in the tissues affected, in the form of a white and solid matter, that it is beyond the power of absorption, and must remain, to a greater or less degree, a mechanical cause of injury to the tissue it occupies.

The composition of the specific deposition does

not seem to be very different in different cases. It consists almost entirely of lithate of soda. Dr. Wollaston, who first determined its composition, states it to be a combination of lithic acid with soda, potash, or ammonia. It is not impossible that the three alkalies do sometimes enter into its composition. It usually, however, consists of lithate of soda, with a small, and probably unimportant and variable, quantity of phosphate and carbonate of lime.

The deposition is not inclosed in an envelope of false membrane. Deposited outside the synovial membrane, it may fill the contiguous cellular membrane, or it may form a coating to the cartilages of the affected joints, or cover and burrow among the tendons which invest them, or even may extend to the tendons that are in their immediate neighbourhood. Those tendons which invest affected joints, as those which surround the metatarsal and metacarpal joints, the wrist and ankle joints, are of course the most liable to be mixed up with the deposition, and to have their functions impaired or destroyed by it.

In extreme cases, the disorganisation of an affected joint may proceed much farther than this. The synovial membrane may be gradually and extensively detached from its adhesions, it may be partially destroyed, and the deposit may make its way into the cavity of the joint. The substances of the cartilages may become involved in the disorganisation; and they may be partially, and it is said they

may be wholly, absorbed. Even the denser part of the bone, which is contiguous to these lesions, may be destroyed, the spongy tissue be exposed and reddened, the denuded extremity of the bone become covered with granulations, and these becoming eventually absorbed, the end of the bone, uncovered by membrane, or cartilage, or its own denser external part, may be left naked.

The forms in which the concreted matter presents itself may be traced to the attending circumstances: thus, its surface may be grooved, as in the joints, where it has been exposed to the effects of friction; or it may be in the form of detached grains, as when it becomes concrete in the cellular tissue, the walls of the cells being subsequently absorbed.

It is extremely rare, however, that the disorganisation consequent upon gouty deposition proceeds to the extent that has now been set forth. The deposition very seldom penetrates into the cavity of a joint, and very rarely affects the articulating surfaces of the bones. In a very large proportion of the cases, its ravages are confined to the cartilages, the cellular tissue, and the ligaments. In some of these cases, the mechanical irritation of the concrete deposit produces chronic inflammation of the affected structures; suppuration and ulceration ensue; the concreted matter is broken down by the destruction of the tissue in which it had been deposited, and is mixed with the pus; the irritative inflammation steadily extends; the cutis becomes involved in the inflammatory action, and ulcerates; and the abscess

thus formed, which has been gradually producing a more and more pointed external swelling, has at length an apex, that assumes through the cutis, as it becomes thinner and thinner, and finally through the cuticle, more and more of the singularly and characteristically white appearance; and, at length, the cuticle gives way in its turn, and the specific deposit makes its escape, largely mixed with pus, &c. The discharge of lithate of soda, &c., often continues for a considerable time after the concretions have been entirely removed. Nor is it only under such circumstances as these, that lithate of soda is often found to be secreted from an ulcerated surface in gout cases. If, in a person of confirmed gouty habit, an ulcerated surface be produced by means of a caustic issue, or result from any other cause, lithate of soda is often found to be mixed with the purulent discharge. In anomalous cases, the nature of which had not been previously determinable, the occurrence of this has been useful in settling the question of diagnosis, showing the case to be intimately connected with the lithic acid diathesis.

Irregular gout may produce, or it may be the consequence of, derangement of any of the important organs. Such cases have been already briefly noticed. What was left unsaid, because it would have interfered with the account of the gouty paroxysm, may now be detailed. And this, which is more peculiarly entitled to be called the irregular form of gout, or the irregular manifestations of the disease, may be fitly followed by an account of the

forms which gouty inflammation assumes, when localised elsewhere than in the joints.

Gastric derangement is very commonly engrafted upon irregular gout, and it very frequently prevents the localisation and development of the regular form of the disease. The derangement of the stomach is almost always greatly relieved by the development of external gout, and much aggravated when the paroxysm is delayed, imperfectly developed, or suppressed.

Perhaps enough has been said of the milder forms of stomach derangement in connection with gout. In some cases, the gastric derangement is greatly increased, and the disease assumes the character of chronic, or, although much more rarely, of acute gastritis.

There is sometimes much risk, lest these cases should be mistaken. They may be much masked, and be mistaken for cases of general debility, attended by atonic dyspepsia, or by morbid sensibility of the stomach. The thirst, vivid redness of the tongue and fauces, nausea and vomiting, tenderness on making pressure over the region of the stomach, anxious expression of countenance, irritable, quick, and often irrepressible pulse, excited heart's action, &c., serve, in well-marked cases, to draw a broad line of distinction between them and the cases that are dependent on debility, and to prevent the possibility of an erroneous diagnosis. But these cases do not generally present these strongly marked characters; and they

sometimes require very careful and anxious investigation.

It is most wonderful, what an amount of chronic inflammation organs will sometimes suffer, and how long this may continue, without apparent disorganisation. It should be known, that these cases often prove this assertion; and it should be stated, that their diagnosis is often attended with much difficulty, especially on a first examination of a case. But the obstinacy of the case, the persistence of the symptoms, and their probable aggravation, the deficient, or the difficultly excited, or the morbid character of the appetite, the distressing thirst, or, perhaps, rather, the pungent and dry feeling of the tongue and throat, the thickened and viscid state of the secretions of the mouth and fauces, and the deepened colour of their lining membrane, the degree of tenderness complained of when careful pressure is made over the region of the stomach, should, in every case, if subjected to frequent and careful examination, lead to an early and correct diagnosis, however much it may be masked in its character and symptoms. The importance of the diagnosis need not be urged. To treat cases of atonic dyspepsia as if they were cases of chronic gastritis, would be to expend unwisely, and needlessly, and often most hurtfully, the power in which the system is already deficient, and which may probably be required for the due, and it may be almost necessary, development of external gout.

Severe cramp, affecting the region of the stomach,

often occurs in some cases of irregular gout. In its worst form, this is accompanied by sudden and great prostration of the vital powers, and a much depressed circulation. Such cases, although much more usually met with in connection with retrocedent gout, are sometimes seen in irregular gout. But there is a milder form of this affection, which, although perhaps equally painful, is of shorter duration, is more amenable to treatment, and is not attended with so much depression of the circulation, nor so much prostration; and this is of frequent occurrence in some gout cases. Such attacks are always and necessarily severe in their character; and in their worst form they evidently and imminently threaten life. These worst cases are, however, happily, more rare, as are the cases of retrocedent gout, than they appear to have been in former times. Men have learned to act more wisely, than to check, or suddenly repress, gouty inflammation of the joints, by plunging the part affected into cold water, or to interfere with and narcotise the nervous system, and thus arrest the gouty paroxysm, by copious potations of punch, sillery, or claret. In one or the other of these ways, beyond all doubt, many of the cases of retrocedent gout, and of fatal 'cramp at the stomach,' or 'stomach gout,' were, in those 'good old days,' induced. There is, perhaps, more risk, in the present day, of gouty people suffering by being restricted to a diet that is too spare, and to potations that are too meagre in quality, and too moderate in quantity,

than of the reverse. It is, of course, almost as important to avoid the one extreme, as the other. The manifestation of gout in a system that has not power enough to localise the disease in the joints, and develop the gouty paroxysm, is believed to be a very frequent cause of these spasmodic attacks. These attacks generally subside as suddenly as they appear; leaving, however, the stomach peculiarly deranged, and the general system enfeebled, for some days afterwards.

It is probable, that disease of the liver does not so frequently attend cases of advanced or irregular gout, as might have been expected from the frequency with which its functions are deranged. But, as has been said, functional derangement of the liver is one of the most ordinary, and practically important, features of the disease, in all its forms and degrees; and this is more particularly true of irregular gout. In the early and regular paroxysms of gout, hepatic derangement, although it is a frequent attendant on the paroxysm, and may possibly form a prominent feature of the case, generally yields as the fit declines; the state of the liver, and that of the system generally, being restored to the natural condition at the same time. But this is by no means so frequently or usually the case in irregular gout, nor after frequent although regular attacks of the disease. Whether the vessels of the liver, after repeated attacks of congestive or of inflammatory action, may be supposed to lose somewhat of their vital tonicity, and to become less

and less able, after every such attack, to recover their natural condition,—or whether the general vitiation of the blood becomes greater and greater, and a larger amount of work is therefore devolved upon the liver, to restore the blood, as far as may be, to its natural condition, and thus the organ has more to endure and to resist,—or whatever be the explanation,—it is unquestionably true, that the worse the form, and the longer the duration, of gout, the greater is the probability that the action of the liver is imperfect, and its functions much deranged, and the stronger the likelihood that this derangement will continue for some time after the gouty irritation shall have subsided, and the more important the part that deranged function of the liver will play in the future history of the case. That the condition of the liver should be thus intimately associated with gout, might perhaps have been inferred from the premises; for whether the principal duty of this great organ be to eliminate and prepare carbonaceous matter for combustion, or chiefly to secrete bile, of which one principal use is probably to assist in separating the chyle from the chyme, and to stimulate the peristaltic movements of the bowels, and so contribute to the carrying downwards of the fæcal and excrementitious matters,—the enormous quantity of blood that is constantly passing through the liver, must make its healthy action very much depend on the character of the blood, and therefore connect it intimately and largely with a disease that is so closely mixed

up with some change in the chemical condition of the blood: it can signify little to this question, whether that change stand in the relation of cause or effect. It must be remembered, however, that some cases of gout are not attended, either in their earlier or later stages, by any appreciable disturbance of the hepatic functions; and consequently, that, however frequently deranged function of the liver attends gout, it is by no means essential to this disease, or a necessary characteristic of it; and, on the other hand, that we cannot hope to find the cause of gout in any future revelation of facts respecting the functions of the liver. Sluggishness or torpor of the liver, with congestion, is the usual extent of hepatic derangement in gout cases; but, of course, there may be chronic or acute inflammation of the organ in gout cases,—as in cases where there is no gout; and after this may be induced structural disease of the liver, in any of its forms. It need hardly be added, that the supervention of organic changes in this, or any other of the organs necessary to life, reduces gout to a secondary position in the mind of the practitioner.

The heart's action may partake of the constitutional disturbance occasioned by irregular gout. The heart may become excitable,—it may be less regular or more violent in its action; and this may be, for months or years, the extent of its derangement; or this may lead to still further derangement, or to organic changes. It is difficult to estimate in what proportion of gout cases, disease of the heart

actually occurs. It seems not improbable, that the frequent and close connection between rheumatism and heart disease, may have led to a common over-estimate of the degree to which this disease supervenes upon gout cases. Admitting this, there can, however, be no doubt, that disease of the heart is a somewhat common termination of protracted and irregular gout.

Pulmonary disease does not often supervene on gout. It is, perhaps, somewhat surprising that this does not happen more frequently. Gout being proof enough in itself of mal-assimilation, and the irregular form of gout being proof that debility has been added to the cachectic condition, the alliance between gout and phthisis becomes evident. The fact that persons who suffer from gout have, in most cases, arrived at or passed the middle period of life, and that they are usually in such easy circumstances that they need not be exposed much to cold and wet, and that they are adequately clothed, and at least adequately fed, may serve, in some degree, to explain why phthisis does not more frequently supervene upon gout. It is at least probable, that many who die early in life from pulmonary consumption, would, had they lived till a later period, have become subject to gout. The two diseases do occasionally co-exist in young people. Confirmed gout is closely connected with a cachectic habit of body, whether hereditary or acquired, and so is consumption; and thus the gouty habit and the consump-

tive habit of body are sufficiently alike, to render it probable, that the children of families in which gout is hereditary, and of cachectic and irregular character, will be liable to suffer from phthisis. A decided gouty tendency in a family, that is manifested strongly and early, and in a majority of the members, will probably co-exist with more or less marked tendency to pulmonary disease in the same, or in different members of the family. Individuals inheriting good and vigorous constitutions may possibly acquire for themselves, and probably for their future offspring, the cachectic constitution, on which scrofula, in all its forms, depends. But neither cachexia, nor its great morbid result, scrofula, can produce gout, nor be its remote or predisposing cause. But cachexia may, and does, modify the gouty condition; and whether in consequence of the individual's own position, his intemperance, or his irregularities, or the effect of hereditary taint, cachexia may render gout irregular, and so convert it from a comparatively manageable disease, that runs a short and defined course, and leaves few and unimportant vestiges behind it, into an obstinate disease, that cripples the limbs, and embitters and shortens the life.

Gout rarely becomes hereditary, without some portion of cachectic predisposition being transmitted at the same time. A man rarely acquires the gouty habit, without rendering his system more or less cachectic. The amount of cachexia will depend on numberless circumstances. Cachexia, of course,

most frequently occurs unconnected with gout; but it may be doubted, whether gout ever occurs without more or less of cachexia. To the production of gout, circumstances are necessary that are not indispensable to the production of cachexia—whether simple cachexia, or this in combination with other morbid conditions. The breathing an impure air for a long time, whether vitiated by miasmata, or putrescence, or imperfect ventilation,—excessive venery, with or without the disease so frequently consequent on its indulgence,—abuse of fermented liquors,—excess or deficiency of nourishment, or the being confined to too few articles of diet,—are some of the principal causes of cachexia, to which various superadded circumstances give a peculiar form and character. Whatever has the effect of superinducing plethora,—of rendering the supply of alimentary matters in the blood greater than their expenditure,—may probably have the effect of inducing whatever is the proximate cause of gout; or this may be modified or counteracted by some other agent, favouring the production of some other disease in its stead. In confirmation of these views, it is not uncommon to find cachexia traceable in a family history in some one form, as in that of severe irregular gout, producing in the different individuals of the existing race different cachectic diseases. One may be phthisical, a second have glandular disease of strumous character, a third may have articular rheumatism of cachectic character, a fourth may

have irregular gout, a fifth scrofulous disease of the joints, and a sixth have died in infancy of mesenteric or hydrocephalic disease; and all these cases may be apparently traceable to the original influence or taint. It might perhaps, then, not be saying too much to affirm, that gout, in all its forms and degrees, is connected more or less with cachexia; and it is at all events true, that there is always this connection in the worse forms of gout. A knowledge of this is essential to a just notion of the disease, and is of primary and practical moment, because it explains many of the phenomena of gout, and gives a key to much that is of the first importance in its treatment, whether with a view to the prevention, the cure, or the alleviation of the disease; for to this last, as our only hope or expectation, irregular gout in its worse forms necessarily reduces us. This explains how it happens, that there are so many disordered conditions—diseases affecting nearly all organs or tissues—allied to gout, or capable of becoming so; and how it is, that they can re-act, as they do, upon one another, mutually aggravating one another, or the one becoming primary and of more importance, as it were, swallowing up or submerging the other: the one of which is seen illustrated in cases where gout and rheumatism really co-exist, or in the early stage of organic disease in gouty cases; the other, in the more advanced stages of organic change of any of the great organs, the gout perhaps almost disappearing, or ceasing to be largely influential, in

the more advanced stages of such cases, even where the organic changes may have been in the first instance directly or indirectly due to the gouty irritation and its effects.

It is unquestionably true, that the stronger the cachectic taint, the more irregular will be the gout,—and the more early will it assume this character, even if it be able at its onset to assume the regular form of the disease,—and the stronger is the probability that it is inherited, and not merely acquired by the habits of the individual,—and, of course, the stronger the probability, that it will be transmitted to the offspring. Gout and phthisis are not then seen together so frequently, as might probably have been expected from theoretical views; and the explanation of this comparative infrequency must probably be sought chiefly in the age and the condition of life.

We believe, that gout is always connected, more or less, with some degree of cachexia of the general habit; but we do not believe, that gout is always connected with a degree of cachexia amounting to scrofulous degeneration, or involving that the offspring should be liable to scrofula. Gout may be occasioned, and be formed in the strongest systems, and in people having the healthiest children; but gout that is largely hereditary, and of more or less irregular character, is never without a larger amount of cachectic taint than this, and always involves the chance that the offspring of the sufferer, if not the sufferer himself, is liable to scrofula. How far the scrofula may have been mixed up with such

gout cases, by an equally direct hereditary predisposition as the gout itself—a scrofulous parent on the one side, and a gouty parent on the other, producing such a condition,—or how far gout alone may serve, by deranging and impairing the powers of the system, to render the offspring scrofulous as well as gouty,—are questions that are by no means without interest, although certainly not satisfactorily determined.

There is a peculiar condition of bronchial mucous membrane to be mentioned in connection with gout—a condition characterised more by symptoms of morbid sensibility, than by those of undue excitement, but which sometimes takes on, and perhaps in all cases is disposed to take on, a more decidedly bronchitic character. This affection is marked by a peculiar dry and wheezing cough, usually occurring in paroxysms, which end generally in more or less of expectoration. This cough is more common in gouty people as life advances, for the obvious reason that old people are more subject than the young to bronchial affections. This affection is usually characterised by being little amenable to ordinary treatment, and more influenced by the condition of the gouty joints, than by the usual means by which bronchial affections are relieved or removed.

Although thus closely connected with gout, and dependent upon it, this bronchial affection is, nevertheless, often distinctly traceable to cold as its exciting cause; and cold and wet may exacerbate this, as any other form of bronchial irritation.

When it takes on an inflammatory character, this affection must, of course, be subjected to the same treatment, as the bronchitic symptoms would otherwise indicate ; but if the case does not assume an inflammatory character, the usual treatment of bronchial affections is in general of little or no use. The bronchial affection increases or diminishes with the fall or the increase of the localised gout, and is seldom got rid of for [any great length of time, without a fit of gout in the extremities ; unless, perhaps, during the summer months, when the increased action of the skin, and the less risk that the degree of its action may be suddenly diminished, lessens materially the amount of work to be done by the bronchial mucous membrane, and the risk of variation in the amount of its duties, thus removing a principal exciting cause of this morbid condition. It should be borne in mind, that, although not of common occurrence, this affection may herald, or even attend, the supervention of phthisis on the gouty constitution.

Disease of the kidneys is, perhaps, not more liable to occur in advanced gout, than in other equally cachectic cases. Gout in the loins, with or without some degree of sympathetic irritation of the kidneys, and some disturbance of the urine, may require to be carefully diagnosed from simple nephritic cases, and sometimes passes into them.

Vesical irritation, vesical catarrh, and chronic inflammation of the bladder, are not rare in cases of advanced irregular gout. The time of life, and the

cachectic habit of body, may, however, have more to do with the production of the deranged states of bladder, than the gout itself. Such cases are necessarily of more frequent occurrence in irritable habits, and when the use of stimulants has been largely abused. Cases of purely gouty affection of the bladder are believed to be very rare.

Retention of urine occasionally occurs in gout cases, and has been at times evidently dependent on gouty irritation at the neck of the bladder, or in the urinary passage. But, more usually, such cases are distinctly referable to some independent affection, as enlargement of the prostate gland, or stricture of the urethra, irritating the passage, and obstructing its patency.

Paralysis is not unfrequently consequent upon gout, and occasionally seems to depend upon it. Decided hemiplegia is not an unusual consequence of undeveloped, suddenly repressed, or retrocedent gout. Nothing shows more forcibly than this does, the amazing influence of gout on the system generally, or to what an extent a development of gout may become a habit of the system that is essential to its preservation. Paralysis is one of the most common terminations of protracted and irregular gout. This bears some relation to the age of the patients, their habits of life, &c.; but the cases especially referred to, as being thus comparatively common, are those in which the apoplectic and paralytic attack has been pretty evidently the result of undeveloped, repressed, or retrocedent gouty irritation.

Apoplectic and paralytic cases, always sufficiently formidable and hopeless, are not rendered less so by being the consequence of gout, or being immediately mixed up with it: the system has two evils to defend itself against, and the risk of failure is probably proportionally the greater. If the shock of the attack be sustained, and the powers of the system be not materially impaired by it, gout is sometimes immediately developed, and relief afforded in proportion to that development; but any amount of the paralysis does not necessarily become relieved at the same time—the relief referred to being the recovered elasticity of the general system, and the diminished or deferred risk of a second attack of paralysis. There are probably few cases ever met with, in the whole practice of medicine, which require such nice and careful management, as these cases do.

The extent to which the nervous system evidently suffers, during the mildest, and simplest, and most regular attack of gout, constitutes a strong and important feature in the disease. The great irritation of the nervous system that attends the fit, the very rapid and great expenditure of nervous power that this occasions, the quickness and the extent to which it robs the system of its energies and elasticity—or power of rallying when relieved from the incubus placed on it by morbid action, the great morbid sensitiveness so commonly attendant on irregular gout, are so many indications of the extent to which this disease influences the nervous system

in general. Neither the amount of pain, nor the disturbance of the circulation, nor the apparent degree of derangement of the secreting organs, will by any means suffice to explain this. Neither the confinement to the bed-room, nor the loss of sleep, will serve to account for it. The disease is one that does decidedly, and to a degree that is beyond our means of explanation, influence and irritate the nervous system, and expend its powers. From this arises some of the risk that attends gout in advanced life, or in feeble constitutions; and this is a reason why gout is so apt to run into the irregular, imperfect, slow, and unrelieving form of the disease; a reason why functional disorders are so apt to be superinduced on gout, and a reason why the treatment of gout should not be actively lowering, unless such be imperatively called for in symptomatic language not to be mistaken.

It is probable, that these debilitating effects are chiefly confined to the nerves of organic and animal life, or to those parts of the nervous system that are concerned in the animal and organic processes; for the mind is seldom clearer, or the imagination more vivid, than immediately after a fit of gout has subsided,—making the mental and the physical state of the patient contrast strikingly with one another.

In a case of suppressed or retrocedent gout, the nervous system suffers from the undeveloped materies morbi—whatever that may be; its powers are oppressed and sluggish, and the risk of a violent effort being made to throw off this serious drag

upon its needful energies, by superinducing some other morbid state, becomes considerable, and proportioned to the degree of oppression under which the nervous system is suffering. This condition, although involving many of the symptoms of nervous debility, must not be confounded with it, is an essentially different thing, and cannot be treated in the same way without great risk. It may seem, theoretically, perhaps, too unlikely that the oppressed state of nervous system induced by repressed gout, could be confounded with loss of its energies and elasticity, in connection with general debility, to render the possibility of the mistake worthy of notice. But practice is continually showing, that the diagnosis between these essentially dissimilar conditions—a diagnosis, too, that must often be of the greatest importance—is not always so easy as it appears; requiring great care and attention to prevent mistakes; and, even with all this care and attention, erroneous views will sometimes lead to as erroneous practice. Cases in proof of the close approach in character and symptoms, presented by these essentially different states, are of very frequent occurrence in practice; and it is of much importance that this should be known and prepared for. A man may have had a fit of gout more or less regular in its character, the fit may have subsided, and this be followed or accompanied by a train of symptoms indicating anything but a gradual restoration of the patient to health and strength—the nights continuing to be disturbed,

and the sleep interrupted, imperfect, and deficient, and the skin acting irregularly, the appetite not improving, and the secretions not returning to their normal condition ; and this state of things may be owing to an inadequate development of gout, or may be attributable to the enfeebling consequences of the fit, and its necessary treatment. It is in such cases as this, that the practitioner should be much on his guard against the possibility of error, calling in all his appliances and means of diagnosis. It may be doubted, perhaps, if a credulous man, one easily satisfied of the truth of a statement, or proposition, which differs in any important particular from what is received by all men, can ever make a skilful practitioner of medicine. It is certain that such a man would be especially liable to blunder in such a case as the above. It would be sound policy in a medical man to encourage and cherish a difficulty of being convinced, a habit of sifting the evidence of symptoms, and calling to his assistance as much of such evidence as he can, without alarming his patient by any needless questions or examination. In a case like the one referred to, a careful examination of the pulse in both wrists, the heart, the respiration, the stomach and bowels, and their secretions, the tongue, and the complexion, adding to this the past history of the case, will seldom fail to lead to a correct conclusion ; and yet, notwithstanding this care, mistakes sometimes occur, or the real nature of the case remains so doubtful, that it is necessary to adopt a temporising

and do-little practice, until some beacon symptom arises to guide and determine the judgment.

The usefulness of the practice of feeling the pulse in both wrists has already been noticed; and in such a case as this, it will be found of much assistance. It is a wise proceeding in most cases, if answering no other end than the keeping up the habit of careful attention; the difference between the pulse in the two radial arteries is almost always sufficient to be noticeable, caused probably by some difference in the size of the two arteries, or by one artery at the point of examination being nearer to the surface than the other. In many cases, when the examination of the pulse in one wrist, supported by the general symptoms, has made the general or local abstraction of blood appear necessary, the careful examination of the other radial artery has shown the measure to be of doubtful necessity, and perhaps altogether inexpedient; the event of the cases commonly justifying the amended opinion. It is not improbable that many a case, in which depletion or the use of mercury has been carried too far, or in which stimulants or tonics have been given unwisely or prematurely, would have escaped such malpraxis, had the simple practice of feeling the pulse at both wrists been the habit of the medical attendant. It may be questioned if a more important lesson than this could be enforced on the attention of a young practitioner, or one that would more amply reward him for its adoption.

To return. It is usually found that there is more

difference between the pulse in the two wrists in cases where the nervous system is oppressed, and the vessels congested, than in cases of real debility. But this is, of course, not conclusive as to the state of the circulation. The condition of the heart's action should be carefully explored, and its impulses carefully compared with the radial impulses. The one radial artery being decidedly more difficult of compression than the other, the heart's action being stronger than it should be in proportion to the strength of the pulse at the wrists, would indicate the probability of the evil being oppression, and not languor. The aspect of the countenance, the character of the eye, and the colour of the face and lips, are not to be lost sight of in forming a diagnosis between these essentially different conditions of the system. Should the countenance appear dull rather than supine, the eye heavy and suffused rather than bright and pale—the globe of the eye and the eye-lids being probably moved in both cases with equal unwillingness—the colour dusky rather than pallid, the probability that the true state is one of oppression, and not of true debility, would be strengthened. All this, however, is matter of perpetual change; and every indication, regarded by itself, is sufficiently uncertain. Matters of this kind must, perhaps, after all, be acquired by usage; and they would hardly have been taken notice of, but to impress the importance of being able to distinguish between such cases, and to point out the frequency with which the necessity arises. A habit of taking,

grouping, comparing, and analysing symptoms must be acquired by patience and practice, by zeal, steadiness, and industry. Without these, no case of gout, or of any other disease, can be judged of or treated; and with these, a medical work on any disease does not require cases, but generalisations, facts and deductions, that are broad, and embrace the mass of its cases, and either illustrate its origin, progress, and results, or what must be considered to be exceptions to its usual history.

Nothing but the observation of gout cases could prove, or satisfy the mind, of the extent to which gout affects the whole economy of the system,—how much it influences all the organs and tissues, and is, in its turn, influenced by them; how much it modifies and deranges the various functions,—and how much it is, in its turn, affected by such derangement, whether caused by, or independent of gout; how greatly the habit of body, the congenital condition, the mode of life, the education, the more or less of work the mind has undergone, the more or less of anxiety it has had to endure, the duly or inadequately regulated state of the moral feelings and of the passions, the kind and amount of wear and tear of body, the active or sedentary life, and the temperate or intemperate mode of living, influence and modify this disease, which is always the accumulated result of inattention to the laws of life, whether this inattention be the fault of the sufferers themselves, or of their parents, or of all parties. And, accordingly, gout is found to be as

different in different cases, as the same disease could possibly be,—not only differing in degree, but in the grouping of the symptoms; some being absent in this case, others in that; some of primary importance in the one case, being comparatively insignificant in the other; in one case, the disease being intimately mixed up with, influencing and influenced by a disordered condition of some important organ; in another case, by derangement of another organ; or, perhaps, in a third case, no important organ being, or, at all events, to any influential degree, disturbed by the disease. All these modifying and ever-varying circumstances make the history of gout a difficult and intricate study, and its treatment a question that can never be empirical without being unsuccessful, and probably injurious.

Sometimes, and this happens in many cases, gastric disturbance, with more or less of dyspepsia, marked by flatulence and heart-burn, sense of fullness of the epigastrium after eating, and irritability or torpor of the bowels, with or without scantiness of the faecal evacuations, to which may or may not be added, disturbed sleep, with spasmodic twitching or starting of the lower extremities, and cramp or numbness, or a slight degree of either of these marks of disturbance of the nervous centres, are among the immediate precursors of gout. And in some persons, these symptoms, or some of them, pretty uniformly occur, when a fit of gout is at hand. In some few cases, the fit is manifested without any symptom having occurred, or been of

sufficient importance to have been noticed by the patient, to warn him of the approaching attack; sometimes, such symptoms occur abortively—without being followed by any paroxysm of the disease; in some people, this never happens. In some, the urinary secretion becomes scanty, or thick, or dark-coloured, previous to a fit of gout; in others, the urine remains clear and pale, and abundant, till the febrile action, attendant on the fit, influences it; and in some few cases, the approach of a fit is found to be marked by an unusually abundant secretion of urine. In some cases, the system becomes evidently lethargic, the circulation labouring and oppressed, the mind dull and listless, and the sleep oppressed, previous to the fit of gout; in others, the individual is remarkable for his *gaieté de cœur*, his mental and bodily activity, on the advent of his attacks of gout,—and they may be predicted by those around him, and who observe him, by this very circumstance.

To return to the catalogue of secondary derangements, connected with or dependent on gout, and to the nervous system, which was being particularised. The ordinary marks of disturbance of the head, as headache, intolerance of light, heat of head, tinnitus aurium, &c., are not among the common precursors or attendants on gout, and when seen are probably to be regarded as signs of some idiosyncrasy, or of high nervous sensitiveness, or of some secondary functional derangement. However irritable the mind may be previously, or during the fit, it is certainly

seldom, and more so than might have been *à priori* expected, that it is accompanied by headache, and still more seldom that more decided symptoms of affection of the encephalon are met with. Such cases are, however, occasionally seen; but chiefly, if not altogether, in the instance of hard students, or people of very full habit, and apoplectic conformation. On the other hand, the head is singularly free from pain or disturbance, in the majority of gout cases; at all events, before the attack, and during its early period. It is often otherwise, when the attack is very severe, or irregular and protracted. As the powers become expended, and the system gets weaker, the nervous system is apt to become more and more mixed up with the disordered state, and, in very many such cases, becomes of primary importance. This constitutes a most important stage of the case, and one that demands careful and close attention. Headache may begin to be complained of for the first time at this late period of the case,—there may or may not be some degree of intolerance of light,—the pain may be permanent or paroxysmal,—it may be confined to the forehead, orbit, vertex, or occiput, or vary its seat. There may, or may not, be increased heat of head, tinnitus aurium, or dulness of the mental faculties; and the sleep may be perfect, or deficient, or disturbed, or wholly wanting. It will be important to determine, whether this be an instance of nervous irritation dependent on debility, or of irregular action of the nervous system, and

disturbance of its functions, consequent on some secondary functional disorder of one of the great organs, as of the brain itself, or its membranes—happily most rare, or the heart—occasional, or the liver—more common. Usually, this is the simple consequence of exhaustion, leading to irritability and mobility of the nervous system. The determination of this question is necessarily important.

It is seldom that the periosteum is influenced, directly, or indirectly, by irregular gout; or that periostitis is found in connection with gout, unless in the more extreme cases, when the system has become greatly enfeebled, and large chalky depositions are being made, in which cases the periosteum does at times become the seat of this deposition, and of some degree of gouty disturbance. Such cases as these are happily very seldom met with. In other cases, where periosteal disturbance is mixed up with gout, it may almost always be traced, although perhaps remotely, to syphilitic or mercurial influence,* or perhaps to both.

The sheath of the nerves is not an unusual seat of irregular gout, forming what is called gouty neuralgia. This is generally a very severe and intractable complaint. It is probably the worst and most obstinate form of neuralgia, that does not depend upon organic changes, and is not therefore incurable. The history of the case—the individual having suffered from gout, or being predisposed to it, or having

* I have seen the frontal and nasal bones, the tibia, and the os calcis affected with chalky deposition in cases of this kind.

led such a life as to lead to the inference that the predisposition may have been induced—especially if strengthened by the presence of some symptoms of irregular gout, would serve fully to diagnose a case of this kind. The best and most speedy cure of this affection is to be found in a fit of regular gout. It may exist, in despite of all treatment, for years. It may have little effect on the general health; or it may derange it essentially, and superinduce serious or fatal disease,—most usually, as it has seemed, of the heart. Like all the other forms of irregular gout, it is, in most cases, traceable to the suppression, or retrocession, or imperfect development of the disease, and is very generally mixed up with general debility. The sciatic nerve is by far the most common seat of this form of gout; and sciatic gout is the name by which it is commonly distinguished; but occasionally, although very much more rarely, the nerves of the face, or of the upper extremity, are affected by it. That it is essentially gouty in its nature, is, perhaps, sufficiently proved by its history, its *irregularly* paroxysmal character, its origin in the gouty system, and more or less directly from imperfectly developed gout, and by the immediate relief obtained by a developed fit of gout. In general, this form of neuralgia is less influenced by change of weather than ordinary neuralgia; but there are too many exceptions to this, to make it of decided value as a means of diagnosis. If not the most immediately alarming form of gout, it is very tedious, uncertain, and diffi-

cult of management, and one that often exhausts the patience of the sufferer, if not of his medical attendant. A thorough change of habits, mode of life, place, kind of air and scene, is almost always indispensable to any hopeful treatment of this affection; and the occurrence of gout in some other tissue is what is to be most wished for.

In cases where gout is at once severe and irregular, it sometimes affects the eyes, forming gouty ophthalmia or gouty iritis; the former we have not very uncommonly met with,—the latter we have seldom seen. In general, these cases have been of active, or even acute character; but sometimes they have been chronic. With the usual means, these cases seldom prove peculiarly obstinate. This observation is, of course, less applicable to the chronic than the acute cases; and the more feeble and excitable the system, and the more marked the hereditary delicacy, and the longer the duration of the complaint, the more difficult will be the management of the case, and the more uncertain the result,—for vision is sometimes seriously, and permanently affected by it. Of course, conjunctival inflammation of gouty character is a less serious complaint, than when the affection begins in, or extends to, the iris, and deeper-seated parts of the eye-ball. The early treatment should be distinguished by boldness and decision. In some rare cases—we may have seen this, perhaps, four or five times, chiefly in chronic cases—chalky matter is poured into the conjunctival capillaries.

It will have been gathered, from what has been said in the preceding pages, that regular gout is seldom followed by swellings that last longer than eight or ten days after the inflammatory action has subsided; and that the less regular the gout, the greater will be the probable amount of the resulting deposit, and the more difficult its absorption; and that it is after the most irregular and sluggish, the least active, forms of gout, that serious and very slowly absorbed, or chalky and, perhaps, unabsorbable, gouty formations most commonly occur. Acute gout is not, by any means, always synonymous with regular gout. There may be a large amount of gouty irritation, and great power to develope the irritation, and the disease may show itself in more than one or two situations at the same time, and in its acute form,—but in such a case, it is seldom that the system is able, however full of vigour, to throw off the whole of the disease, until it has become so far enfeebled, that, towards the close of the attack, the disease does not pass into a less acute form, and, in many cases, even into a chronic state, and the disease cease to be regular in the same proportion as it loses its acute character. It very rarely happens, that gout, however acute its onset, if involving more than one part at the same time, passes through an acute and defined course, leaving the system free from irritation, and the part affected free from a lingering, if not permanent deposition. The term regular gout should be restricted to such cases as are, from their commence-

ment to their termination, of acute character; and if so restricted, it will be found, that gout affecting more than one part, or gout that has undergone metastasis, can seldom be called regular; and it will seldom occur, that regular gout is followed by an amount of deposition, that is not rapidly, and, to all seeming, completely absorbed. A doubt has elsewhere been expressed, as to whether gouty action does not, in all cases, leave some traces of its consequences in the tissue affected; but this is, of course, little more than conjectural. The greater the amount of acute, and the less of chronic gout, that has characterised what must be called the fit, or the uninterrupted attack of the disease, from its onset to its complete intermission, the smaller will be the probable amount of deposition, the more absorbable its character, and the less real or permanent the injury inflicted on the affected tissue. It is not regular gout that produces crippled joints, and leaves permanent enlargements, and chalky deposits; it is not acute gout, nor active gout, that does this,—using the word active, to express a degree of gouty action, that is intermediate between the acute and the chronic degree of inflammation. It is gout characterised by chronic inflammation, that is so much more liable to be followed by such lamentable, and long-continued, if in some degree relievable, or not permanent, consequences. It is the essentially chronic gout,—the gout that is hardly marked enough in local character to deserve the name even of chronic inflammation; it is the

smouldering, scarcely-developed, gout, that produces the worst cases of crippled joints, the largest amount of deposition, and the deposition of least absorbable character, and the most chalky* and concrete in composition and density; and that produces the greatest degree of articular disorganisation, often permanently destroying the mobility of the joint, and leaving it virtually as if it were ankylosed. It is almost always this kind of gout, which produces the enlarged joints, the thickened ligaments, and the deposition, which, at length becoming a source of mechanical irritation, excites morbid action in the tissues around it, producing inflammation and ulceration, allowing the escape of the chalky matter, and forming a troublesome sore. It is this kind of gout, that is marked by the hobbling gait, the contracted joints, the hands whose fingers have been well likened to a bunch of parsnips, no longer adapted to the delicate and various movements required of them; and which, in its turn, acting upon the constitutional powers by continual morbid irritation, and ever threatening, and probably frequent, exacerbation of the local symptoms, coupled with the loss of exercise and its multiplied uses to the body's economy,—and on the mind, by shutting it out of the enjoyments, embellishments, uses and ends of life,—makes the unhappy sufferer a hope-

* It will be borne in mind, that the word *chalk* is used to signify the crystallised lithates which are deposited by the gout, in contradistinction to the products of common (not specific) inflammation, that are necessarily deposited along with it in the first instance.

less wreck on life's ocean,—a pitiable spectacle, and, it must be added, a beacon light to others, especially to his own children, to avoid, as far as they can, the sands on which his health and happiness and physical capabilities have been stranded.

The rapidity with which this extreme form of gout, which is well called smouldering gout, will sometimes effect its work of irremediable devastation and deposition, is as astonishing as it is sad. The patient, between the exacerbations of the disease, is often comparatively well; and if not endowed with high feelings, and sensibilities, and anxieties, for the maintenance of his position, or for its aggrandisement, or for distinction, or power, or the means of rendering himself useful or eminent;—if, as may be, his views are narrow, and the reverse of soaring,—if the malady has brought him to this sad state, when the exertions of earlier life have ended in the acquisition of wealth enough to serve his simple, or sensual, or little better than sensual, purposes,—these intervals, whether of days, or weeks, or months, between the exacerbations of the ever present gouty state, may not be unhappy,—surrounded, as such a man will be, by whatever has been among the objects for which he has toiled, and the means and appliances of what he has looked forward to as constituting enjoyment. And this, if we are to trust to books, is the vulgar notion of the poor victim of gout. The miserable—for whether he still knows some degree of happiness or not, he may well be so called—and crippled being, no longer

able to walk, or to use his hands freely, or to taste the pure sensual luxury of muscular exercise, is taught,—however rich, and however surrounded by the countless things that wealth can buy,—is daily taught the truth of the old saying, that a man's best servant is himself. But such men as these—useful as such men unquestionably are in this world's economy—by no means make up the number of those whom gout brings to this crippled and helpless state. We find the man of high and noble feelings, of pure and mighty thinkings,—the highly intellectual and moral, the little sensual, the highly born, or the self-ennobled children of the world,—the deep and close thinker,—the man of letters and hard study,—the successful soldier,—the lawyer, whose mental toils have been incessant and unwearying, and whose labours have been crowned with all of fame that he could have dreamed of, or hoped for,—the statesman, capable, by nature, and as a consequence of hard thought and study, of wielding the interests and destinies of his country,—these men and such as these, the foremost men of the world,—among the ordinary and the sad victims of this unsparing disease; and not only these men,—but their offspring, the lineal inheritors of the organisation that prepared them physically for gaining and accomplishing so much, inherit their diseases more surely than their talents and intellectual and moral capabilities, and have in them the seeds, that want but little of air and heat and moisture, or but neglect of the preventive means, and slight exposure to the

causes, to make them suffer as their parents, and cause them likewise to be the victims of gout.

At length, the poor and wretched victim of this worst form of gout—to which, however, all cases of confirmed gout tend,—cases in which the occurrence of gout at certain intervals becomes a habit of the system, failing which, there is increased and increasing derangement, and either chronic or smouldering goutiness—becomes affected by some other ailment, to which it may be that the system, thus shattered, and, as it were, worn out, offers a ready prey. It is seldom that a man can be said to die from gout; although cases are of occasional occurrence, in which there are few marks of disorganisation discoverable after death, excepting the local consequences of gout. But, in general, disease, corresponding with the symptoms before death, and sufficient to account for it, is discoverable in some of the great organs, as the liver, the heart, the kidneys, the lungs, or the brain.

In comparing gout patients with those suffering from other complaints, whatever may happen to be their stations in life, their habits or pursuits, or the probable chief predisposing circumstances,—whether intellectual excesses, or sedentary habits, or intemperance,—it may be confidently stated, that they are, as a class, distinguished by being above par, in point of talent and capability. It is believed, that it will be generally admitted to be rare to see a gouty man, who is not above the average of those of his class and opportunities, in degree

of intellectual power. And thus are most gouty people guilty of having allowed an organisation to become affected with a disease, that will probably shorten life, and abridge its usefulness, which would have been capable of much, if kept in health, and permitted to have all its chances of living to the usual span of existence. It is admitted, on all hands, that gout takes from the expectation of life; and this is generally acted upon by Life Insurance Offices.

The effect of gout upon wounds, and of wounds on gout, is often an interesting question to the surgeon,—increasing the probability and the risk of erysipilatous inflammation, after an operation or an injury, on the one hand,—or of an attack of gout, after an injury or an operation, on the other. Many surgical works contain valuable illustrations of this; and it should be borne in mind, inasmuch as it may influence the prognosis, or affect the question of an operation being advisable, or lead to its being deferred, until after the system may have been relieved from some of its gouty liabilities by an acute attack of the disease.

As far as their practical bearings are concerned, the causes and the history of gout have now been, perhaps, sufficiently entered into. Nothing, as yet known, of physiology and chemistry, serves to explain farther the nature of gout. It is questionable, whether we are justified in expecting that future physiological and chemical investigation will ever be able to determine the nature of this disease.

We may, indeed, be told, that the true cause of plethora is an excess of organisable materials in the blood. It may be explained to us, that, when the temperature of the air is raised, its consequent rarefaction causing it to contain so much less of oxygen in a given volume, the amount of oxygen brought into contact with the blood at every inspiration we take, is diminished in the same proportion,—and that under such circumstances, the blood is by so much less efficiently deprived of its redundant carbon, and is either surcharged by so much with carbonaceous matter, or there is so much of extra work thrown upon the other organs, which may eliminate the carbon,—or that so much less of carbon must be introduced into the system,—or the balance between the supply and the expenditure is not maintained, and a form of plethora, or an approach to plethora, must be the consequence. It may be said, that every movement of the body involves some waste of its materials,—and that, consequently, every pulsation of the heart, the passage of every atom of blood along the current of the circulation, the expanding of the chest in every inspiration, the contractile action of the stomach and bowels, involve some waste of the organs concerned in those actions. It may be contended, that every exercise of nervous power, whether in ministering to the respiratory, or the circulating, the digestive, secreting, absorbing, or expulsive functions, or to the development of thought, or of will,—or every exercise of the nerves by which the voluntary muscles are called into

movement, or of those by which sensation is conveyed to the sensorium,—involves the waste of some part of the living materials of the body, and, in fact, the death of those materials, their being resolved again into their elements,—the nitrogen re-entering the current of the circulation to pass off by the kidneys, in union with hydrogen, in the form of urea,—the carbon being taken away by the same channel, to be carried off principally in the lungs, when it unites with oxygen, and is expired in the form of carbonic acid,—the remaining principles, hydrogen and oxygen, being expended in the form of water, in excretion, and exhalation. It may be inferred, that it is to supply all this waste, we eat and drink: that to supply the very large quantity of carbon required in respiration, and expended during this act, for the obvious purpose of maintaining the animal heat by its combustion, we take food, the constituent elements of which consist largely of carbon,—part of which carbon is probably expended at once in respiration,—the greater part being, in the first instance, used to repair the waste of the bodily organs above spoken of,—the wasted parts being made use of as fuel for the maintenance of the temperature of the body. It may be urged as probable, that whatever interferes with the due proportion, which the waste and expenditure should bear to the supply, whether by lessening the expenditure or increasing the supply, will induce, at length, the state of system so long known and understood by the word plethora;

and this not only in the case of carbon, but in that of nitrogen also, the other principal elementary constituent of the body which is supplied by the food. If too much nitrogen be taken in the food, in proportion to its expenditure in the movements of the body, and its several processes, it may be said that we might have another kind of plethora,—or that plethora might differ in some degree when depending on an excess of nitrogen in the system, and when depending on an excess of carbon,—and that the former might prove to be the form of plethora which is so intimately connected with gout. It may be added, that we expend these elementary matters in every movement, thought, emotion, passion, voluntary or involuntary muscular act,—that we husband them, or greatly diminish their expenditure, during sleep, by so much as we do not think, nor perform voluntary movements,—that we increase the expenditure, as we breathe more quickly and fully,—and are enabled, by these views, to explain the effects on the system, of exercise of mind and body, of sleep, of the temperature, rarity, &c., of the air respired,—and have given to us an interesting explanation of many of the phenomena of plethora. All this may be true, and is at all events very interesting; but it is to be feared, that the advanced and advancing chemistry of the age we live in, has done and can do little more than this. It may be doubted, whether the nature of disease will ever be explicable, either by the chemist or the physiologist, the

humoralist or the solidist. The causes of diseases, and the organic changes which they produce, and the treatment by which they are to be cured or relieved, if curable or relievable at all, are more or less known and acted upon; and this knowledge is being constantly added to. But it is probable, that little or nothing is known of the proximate cause of disease, or indeed of the reason why morbid action is set up at all, unless we fall back upon the *vis medicatrix naturæ* of the ancients. Why do not the kidneys relieve the system from any excess of nitrogen, by increased action? why do the lungs and the liver not eliminate and carry off any excess of carbon? why is not the body's waste always adequately made up for by the digestive organs? and why are not these organs in their turn kept in healthy activity, by the healthy character of the blood they indirectly produce, which in its turn ministers to the formation of their solvent and vital peptic secretions? why is not the brain always apt for thought, and capable of continued and healthy exertion? why are not the organic, the respiratory, the motor, and the sentient nerves always in a state to do their duty well, and efficiently, without interference with the duties of one another, or derangement of any of the processes of life?—are as unanswerable questions as they ever were,—practically interesting as their solution would necessarily be. But man is born to die; the seeds of life and death may be truly said to be sown together. The supply exceeds the expenditure during the period of

growth, to provide for the increasing size of every part of the body; and to promote this intention, the sleep needful for the economy of the system is long and perfect. When the growth is completed, the supply and expenditure must be balanced, or disordered action is set up; and if unrelieved, it ends in disease, and this in death. If the individual escapes from, or struggles successfully through, such trials—not to speak of those arising from disturbance of the equilibrium, or derangement in the momentum of the circulation—as life passes on, the expenditure begins to exceed the supply,—and the necessarily greater waste, and the necessarily less active condition of the supplying organs, render less labour of mind and body within the powers of the individual,—and by degrees the denser tissues, and diminution of flesh and fat, and feebler powers of mind and body, show the individual to be arriving at the confines of the bourne from which no one returns. The time may, indeed, be at hand, when the genius and investigations of the great chemist, Liebig, and of the distinguished disciples of his school, may determine the nature of disease to consist in certain chemical changes in the composition of the various parts of the body, in the proportions of the elementary atoms which compose the nervous, or the fibrous, serous, mucous, vascular, or parenchymatous tissue; and that remedies act upon diseases, by restoring the chemical composition of the affected tissues to their natural state. But this is, at the best, problematical. Observations

can hardly be said to countenance this, and certainly do not prove it; and, notwithstanding the advances made in all the collateral branches of knowledge, we are still as ignorant of the proximate cause of gout, or any other disease, as we ever were. The facts and deductions of modern chemistry are, notwithstanding, of much interest to medical men. They may, at some future time, shed as much light on pathology, as they have already shed, or seem likely to shed, on physiology. The theories of Liebig, on nutrition, respiration, and excretion, are most important contributions to the science of medicine.

It may be convenient to give here, a short statement of the principal means of diagnosing gout from the, in some respects, kindred, but essentially different disease—rheumatism. These observations may probably be found scattered in various parts of the work; and others referring to this question may probably be gathered more or less directly; but a few collected remarks may assist the less experienced, when the question is intricate and difficult. The diagnosis between acute gout and acute rheumatism is generally sufficiently marked and determinable. The remissions in the paroxysm of acute gout are usually much more distinct, than is the case in acute rheumatism. The profuse perspiration, so characteristic of acute rheumatism, is hardly ever observable in acute gout; not that it is meant to be asserted, that the skin is not often damp with perspiration in acute gout—for the skin of the part affected is often largely so during the remis-

sions ; but that the general profuse perspiration, so very usual in acute rheumatism, and to such an extent as to give the skin a sodden look, hardly ever, if ever, accompanies acute gout. In acute gout, the affected parts are much more intensely painful, when neither touched nor moved, than is the case in acute rheumatism ; and the swelling of the parts is less diffuse and less early in gout cases, being more gradual in its formation, and more confined to the region of the joint, and the cellular tissues immediately over it ; and to this must be added, the peculiarly red and burning hot skin of the affected joint, when the gouty action involves the skin of the part, and its subsequently glassy and pasty look, and the œdematous conditions so commonly consequent upon gouty, and so rarely upon rheumatic, inflammation. The œdema of the affected joint must not, however, be confounded with the more general œdema, that often follows rheumatic cases, in which there is much loss of power, and general prostration. In acute rheumatism, the attack usually involves, and chiefly affects, the larger joints, and those nearest to the trunk of the body—shoulders, hips, &c. ; whereas, in acute gout, and especially in early acute gout, the smaller joints of the feet or hands are in general exclusively affected, or are so in the first instance ; the gouty inflammation seldom involving more than one or two joints at the same time. The general fever is usually of purer, and more intense inflammatory character in acute rheumatism, than in acute gout, in which it is commonly of more nervous

and irritable character. In acute rheumatism, the heart's action is seldom quite uninfluenced throughout the whole of the attack, independently of the necessary quickening of the impulses, and their necessarily increased tone; and the heart is seldom influenced further than quickened and irritated action in acute gout. The usually marked exacerbation of acute rheumatism in the afternoon, or early evening, and the generally increased irritation and suffering throughout the night;—and the aggravation of acute gout in the very early morning,—are sometimes, although not always, good auxiliary diagnostic characters. The age of the patient, supposing it to be a first attack, will often be an important means of diagnosis. Dr. Macleod, in his very valuable work on rheumatism, shows, by admirable tables of cases, that about one-half of the cases of rheumatism occur before the age of forty years. If not thus guided by numerical facts, we should have thought that this was much understated, and that a much larger proportion of rheumatic cases, and, of course, especially of cases of acute rheumatism, occur long before that age. The observation of the rheumatic cases at Buxton, would have led us to say, that three-fourths of the cases of rheumatism are first attacked before thirty years of age; but this experience is liable to the objection, that it is derived from cases, which are, in a large proportion, drawn from the great factory districts of Lancashire and Yorkshire, and from a class in which rheumatism would be apt to show itself early. But it

is in diagnosing between chronic gout and chronic rheumatism, that the real difficulty is met with; and in these cases, we may be left without assistance from ascertainable hereditary predisposition, from age, from sex, from habit of body, from the history of the life, from the size of the joints affected, from the state of the circulation, or from that of the digestive organs, or of the secretions. In both, gout or rheumatism may have been unknown, or unheard of, in the preceding generations of the family, or both may be believed to have been present; in both, the age may be the same; in both, the habit may be equally plethoric, or equally cachectic; in both, neither rheumatism nor gout may have been felt in the passed years of life; in both, the urine may indicate undue acidity, or not; in both, the stomach may be out of order, or the digestion little affected; in both, there may only occasionally be felt any pain or uneasiness of the affected parts, which may have become gradually swelled, stiffened, charged with hard deposition, and contracted; and such cases may, indeed, often be diagnosed with much difficulty. Should the habits of life have been such as a comfortable position in worldly circumstances, in some degree, involves; should the complaint be untraceable to cold, and very little, if at all, aggravated by change of weather; should there be tangible evidence, that there is not only deposition, but chalky deposition; should the pulse be slow and easily compressed, and the heart's action be little affected—it being, however,

expressly stated, that this is very variable, as far as frequency of the pulse is concerned; should there be an eruptive tendency, especially if of dark-coloured pimples, or blotches, about the face; should there be decided dyspeptic indications; should the urine be frequently or usually unduly acid; should the disease have occurred in females, for the first time, after the cessation of the catameniaë; these would, one or all, by so much serve to strengthen the probability, that the case is one of gout. On the other hand, should there be no deposition, or manifestly only a gelatinous deposit; should there be contraction, independently of deposition*; should the case be ascribable to cold, or perceptibly affected by change of weather; should the pain be sensibly increased by the warmth of the bed,—or rarely occasion inconvenience, except on movement or pressure,—or the uneasy feeling be sensibly relieved by warm applications or pressure; should the case occur in the hard-working and exposed classes of the people; the probability that it is one of rheumatism will, by so much, be added to. The two diseases are unquestionably very distinct from one another, in their great bearings of prognosis and general treatment; and the diagnosis is of proportionate importance. Hereditary predisposition, or the state of the heart's action, or the state of the digestive organs, or the

* This is often an important indication, that the case is probably rheumatic; and if, in addition to this, the joint has a waxy appearance, the skin seeming as if tightened and stretched over it, the probability that the case is one of rheumatism will be strengthened.

presence or absence of eruptions, or the appearance of the parts affected—especially if occasionally exacerbated, and when so always with sensibly increased heat, and some surface redness (gout); or undisturbed nights, unless disturbed occasionally, or for a short time at once, by cramps, or twitchings, or startings of the limbs (gout); or the general restlessness at night, with more or less exacerbation of the sufferings in bed, or the more or less extension of the irritation to the shoulders or hips (rheumatism); may, severally or collectively, negatively or positively, help to determine this, sometimes, it must be confessed, difficult, and sometimes, after all, undecidable question. As to the disease called rheumatic gout, the name is often used as an excuse for uncertain diagnosis, and applied sometimes to gout, and sometimes to rheumatism; the mixing-up of the two diseases in the same case being, in truth, of very rare occurrence.

The heart is occasionally found to be overloaded with fat; and indeed fat may be in some degree substituted for, or at all events infiltrated into, the muscular substance of the heart. These cases are by no means peculiar to either gout or rheumatism, but are sometimes met with when there are no indications of either of these diseases; but we think that this condition of the heart is much more common in gouty than in rheumatic cases, and that it is in rheumatic cases a very rare affection. This state of the heart is commonly, but not necessarily, associated with general obesity.

CHAPTER VI.

THE TREATMENT OF GOUT.

THE treatment of gout must be determined by what is known of the nature of the disease, by its history, and by the symptoms and circumstances of the individual case. If it be true that gout is a disease essentially dependent on mal-assimilation,—that it is a disease in which a part, larger or smaller, of the alimentary matters, is either not converted into healthy blood, and the natural tissues which are formed from it, or in which the already used and expended atoms of the various organs, instead of being wholly and promptly carried out of the system, are in part retained, and give rise to morbid products,—or, however otherwise such derangement may be induced, if derangement of assimilation be essential to the production of gout,—it is evident that the treatment must be directed to such derangement, and be of a nature to relieve it ; and that it must be constitutional, and cannot be confined to the part that may appear to be specially affected with the complaint ; and that, to do any good, all the organs of assimilation must be brought under treatment. In connection with the nature of the disease, the close

alliance between gout and plethora, and the observation that the gouty habit is characterised by a feeble condition of system as well as a plethoric, must be taken into the account ; and while the plethoric habit is kept in view, the condition of system upon which the plethoric state is grafted, or with which it is necessarily connected, must also be kept in mind, and be allowed to guide, or to modify the treatment. Again, as regards the history of gout, its paroxysmal character, and defined course,—its having, when circumstances are favourable, the obvious tendency to exhaust itself, taken in connection with its constitutional origin, and necessarily long period of incubation,—the time of its duration being chiefly influenced by its intensity, or the degree of the local inflammation that accompanies it, viewed in connection with its equally ascertained character of producing more local change, and more derangement of the nervous system, and of the various functions, in proportion as the disease is less acute,—will greatly influence the treatment, make the suppression or repression of acute gout rarely advisable, and confine the treatment of the paroxysm, almost exclusively, to regulating the action of the different organs, modifying, if needful, the local inflammation, and preventing, as far as possible, any secondary derangement, or sympathetic disturbance, from interfering unnecessarily with the course of the paroxysm. Again, as regards the symptoms and circumstances of the individual case under treatment,—the age, the habits of life, the powers of the system, the severity of the attack, as

marked by symptoms of general or local disturbance, the part or parts affected, and the amount of functional derangement, are so many points to be diligently noticed, and made to serve as guides in the treatment of the paroxysm. To treat gout without reference to its nature, would be to attack the greatly disturbed, and probably highly febrile, constitutional symptoms, by measures that the event of the case would show to have been by far too active and lowering; to treat gout without reference to its general history, would probably be to suppress, or greatly repress, the local manifestation of the disease,—and to make the case infinitely worse, by producing the metastasis, or perhaps the retrocession, of the local gouty action,—or to convert acute into chronic, or even into irregular gout, which the history of gout cases shows to be a much less manageable complaint, one that is necessarily attended with more local injury, and which probably involves more serious constitutional disease; and to treat gout without reference to the symptoms of the individual cases, would be to reduce the treatment to empiricism, to lower some systems too much, and some too little, and to make the old gout remedies, “patience and flannel,” the only safe means of treatment.

Practical purposes will probably be best served, by dividing the subject into the treatment of a paroxysm of regular gout,—the treatment after such a paroxysm,—the treatment of chronic and irregular gout,—and the preventive treatment, which, as far as it may be in our power, may be

called the radical treatment of the disease. The treatment may be considered under the heads of general and local means ; and the general treatment may comprise the medicinal, dietetic, and general management of the case ; embracing the various moral and hygienic matters that might minister to its well-doing, or interfere with its course.

Bearing in mind what has been said about the nature of the disease, and its history, and their important relation to the treatment, a paroxysm of gout must of course be dealt with, in some degree, according to the severity of the general and local symptoms. But, if the disease be perfectly regular, the local inflammation quite equal in intensity to the constitutional disturbance, and if the condition of none of the great organs be peculiarly affected, the history of gout and its nature must be kept peculiarly in view, and the treatment must be of an expectant, rather than an active character. So quick, and hard, and jarring a pulse, so hot a skin, such excitement of nervous system, so feverish a tongue, as in almost any other disease would not only justify, but demand venesection, will seldom show that the abstraction of blood is desirable, or otherwise than eventually inexpedient, in gout. Of course it is not meant by this to say, that the use of the lancet is to be prohibited in gout cases ; but it is meant to be contended, that the medical man who uses it least frequently, will generally be found to be the most successful gout-practitioner. If some secondary affection demand phlebotomy, the case has,

strictly speaking, ceased to be a simple question of gout, and must be treated according to the character and degree of this affection. If the state of the head, or chest, or abdomen, or kidneys, demand venesection in an attack of acute gout, venesection must be had recourse to, as if the gout were not, and must be repeated, if need be, and pushed ad deliquium if this be demanded by the severity and importance of the attendant complaint, precisely as if it were not part of a case of gout. It is not to such cases as these, that such remarks as the above may be applied; but to the ordinary, and even severe, and highly acute cases of regular gout, unmarked by any particular attendant complaint, and only marked by intense local inflammation, and much general excitement. To abstract blood in such cases is very generally an unwise proceeding. It may relieve, and relieve very materially at the time; but there is strong reason for thinking, that the ultimate effect is to repress the fit unduly, and to lead to the unsatisfactory result of its becoming more or less chronic, or even irregular, or of the recovery from it being lingering, or of the succeeding fit making its appearance sooner afterwards than its wont, or than it otherwise might have done. But cases of regular gout do occur occasionally, in which venesection cannot be justifiably, or even safely, dispensed with,—in which constitutional and local symptoms run high, resist less immediately efficient treatment, and risk important mischief to the economy. In such cases, the lancet will

be more readily had recourse to, if the patient be young, and of sanguine temperament,—if the attack be recent,—if it be a first attack, or at all events not an attack following so many as to lead to the inference, that gout has become the habit, or necessity, of the patient's system,—if the disease be not hereditary, or have been largely contributed to by the life and habits of the patient. And, on the other hand, if the patient be not young, and be of nervous temperament,—and the attack be not recent,—nor gout a rarely occurring complaint, nor of recent origin,—and if the disease beyond a doubt be derived from the parent or parents,—and if it be owing as little as possible to the patient's habits,—the use of the lancet must be thought about most carefully and cautiously, the probability being kept in view that, however apparently indicated by the symptoms, its necessity is doubtful, and eventual advantage most problematical. We have never yet met with a case of this kind, in which phlebotomy has been found to be indispensable, or in which we have seen reason to regret not having had recourse to it. Venesection, then, must be said to be generally inadmissible in the treatment of gout, and seldom justifiably resorted to when gout is not complicated with other diseases; and the few exceptions to this rule have been cases of recent gout, the attack being either the first, or an early attack, the patients not old, and being evidently surcharged with power and elasticity.

The application of leeches is hardly ever of the

least service, and is, very generally, decidedly injurious to gout. If applied near the part affected, the local inflammation is usually increased, or at all events unrelieved, by them; and if applied at a distance from the local gouty inflammation, there is considerable risk, that the gout will either migrate to that neighbourhood, or make its appearance there in addition to its existing site. There is, probably, one description of cases, in which the application of leeches might be of much service, and in which it would be advisable to give them a trial. This is when gout has taken up its seat in some very undesirable position, as in the loins or hip, and when the amount of febrile and inflammatory action seems otherwise to indicate the propriety of loss of blood, and the other circumstances of the case do not contra-indicate it, and when it seems not unlikely that the application of leeches to the more common and desirable seats of gout, as to the great toe, might be attended with good effects, and lead to the migration of the disease, and determine it to the part where the leeches had been applied.

There can be no doubt, that the abstraction of blood during a paroxysm of gout, is apt to render the local affection migratory; and metastasis of the disease, especially when already in some distant part of an extremity, is, of course, to be avoided, unless under very peculiar circumstances, which must be of rare occurrence. If venesection have to be resorted to, the earlier it is done, the more efficient, and the safer will it be. All inflammatory

affections, which are mixed up with, or involve, much constitutional and febrile disturbance, rapidly expend the nervous power and the vital elasticity of the system, which have to be trusted to as the means of rallying or maintaining the energies of the circulation, and keeping it in the state which is necessary to the various organic processes, and without a certain amount of which the organs very generally undergo structural changes. One of the most remarkable features of the attack of gout is the rapidity and degree, to which it involves a large expenditure of nervous power; and the less of it that may have been expended, the less must be the risk of venesection, and the greater its probable advantages. The metastasis of gouty inflammation is almost always accompanied by sufficient evidence of diminished power of system. Metastasis is more common in cases of weakened systems, in cases of old gout, in cases of relapse, in cases where the patient had been living too low, or been undergoing, for some time previous to the attack, a large amount of mental or bodily fatigue. It is anything but a sign of power; although patients sometimes regard it as an indication of constitutional energy. It can only be so by comparison with retrocedent gout, or with cases that have degenerated into the chronic or irregular form of the disease. It follows, that the existence of a marked tendency to metastasis in a case, or its having already occurred, should be an additional reason against phlebotomy, or the direct loss of blood in any way; and that the supervention

of metastasis upon a case that has, or has not, been actively depleted, leads to the inference, that the powers of the system have been sensibly impaired.

Supposing, that, either in consequence of some secondary affection, or from the violence of the gouty action and the great constitutional disturbance attending it, venesection has been resolved upon, the above observations should have some influence in determining the quantity of blood to be taken. The amount of nervous power that will necessarily be required to carry on the paroxysm, and to prevent it from ending in the chronic or the irregular form of the disease, should be kept steadily in view, and, as far as may be, provided for, by avoiding its undue expenditure in the treatment of the case; and the more immediately the kind of treatment influences the powers of the system, the greater will be its ultimate, as well as its direct and immediate influence, and the greater the risk of expending the powers largely. Hence the much greater risk of venesection as a mode of treating gout, than of using freely the other means of depletion, and of moderating febrile and inflammatory action.

The character of the blood drawn can afford no guide, as to the quantity that should be taken, or as to the advisability of repeating the venesection, in any arthritic disease, and, perhaps, least of all, in gout. In all such diseases, the state of the blood is probably much influenced, and, at all events, the separation of the fibrine from the colouring matter,

&c., after the abstraction, is accomplished more readily, and to a greater extent, than is either natural, or than is commonly the case in other equally inflammatory affections,—giving a remarkably thick coat of fibrine to the crassamentum, leaving the lower part of the crassamentum friable or little tenacious, and separating the serum from the crassamentum more entirely, than is usual in other cases of inflammation. Whether the altered condition of the blood, the diminished tenacity of its globules, which is, perhaps, reasonably inferred from these facts, may give rise to any fair theoretical speculations, as to the cause of the rapid and great influence which such diseases have on the powers of the system,—or whether it be simply the consequence of this influence,—or whether it serves to explain, in any degree, the risk that attends such an amount of venesection in these cases, as would be required and judicious in other inflammatory affections of similar degree,—are probably so many undetermined questions, but which may lead to, or may serve to confirm, future investigations and theories, respecting the nature and the treatment of arthritic affections. Is this state of the blood a mere attendant, or a cause, or a consequence, of the peculiar inflammatory action? or is it mixed up intimately with the habit of body predisposing to the peculiar inflammation? Does it depend on the blood being surcharged with carbonaceous matter, from undue action of the hepatic, or deficient action of the pulmonary functions? or does it not rather

depend on deficient expenditure of the fibrine itself,—the waste, and already used, fibrine of the system being either imperfectly carried off, or an undue amount of nitrogenised matters being assimilated. The organs of assimilation can, perhaps, hardly be unduly active in any diseased processes, or can rarely be so; the organs in general, including of course those of excretion, are much more usually too little active; and it is not improbable, that an accumulation of nitrogenised products, and among the rest of fibrine, dependent perhaps on the imperfect elimination of expended tissues, and on deficient action of the great emunctories of nitrogen, viz.: the kidneys, may have much to do with the predisposition to gout, and with the peculiarities of the paroxysm,—as to its course and its treatment. Whether the imperfect elimination of expended tissue, or, in other words, deficient disengagement of their elementary constituents, and return of those constituents into the current of the circulation, as the direct way of getting rid of them, may not constitute the predisposing cause of a very large class of diseases, is a most interesting and important question; and whether those diseases may not be further subdivided and determined by the circumstance, that all, or only certain, of the elementary matters are thus insufficiently eliminated; and whether the imperfect, or inadequate, elimination of nitrogen, and its more important products, may not furnish the true predisposing cause of gout, and its allied

diseases,—these circumstances constituting plethora, and being the causes of its varieties,—are questions of practical moment, for the solution of which too much investigation could not be bestowed,—striking out, as they might do, a means of either preventing, or perhaps of more directly curing or relieving these diseases, than we now possess. At present, however, we are unable to determine these points, or to do more than offer an opinion concerning their probability, and on the influence they may have on the whole question and bearings of this disease. They would go far to explain the necessity of a long acting predisponent cause, the constitutional origin of the disease, the difficulty of managing it, the risk of undue interference with it, and its troublesome consequences. But, still, however satisfactorily this might serve as the predisponent cause of gout, it must not be mistaken as its proximate cause, nor be supposed to be the disease itself. Gout is a constitutional disease, manifested locally ; or if not so manifested, capable of deranging almost every organ of the body. How this local manifestation of gout should relieve the constitutional disturbance, to the degree which we know that it does, or be able to act in relieving the state of system, which, it can hardly be doubted, is the predisposing cause of gout,—however, in its turn, plethora may be explained,—is of course unknown, and may possibly always continue to be beyond all reasonable conjecture.

The abstraction of blood, whether generally or

locally, by the lancet or by leeches, being, in a very large majority of gout cases, considered to be unadvisable, it may be well to say, that the same observations apply, with very little qualification, to the taking away of blood by cupping instruments. When the head, or stomach, or liver, or heart, or kidneys, are evidently mixed up with the gouty derangement, and seriously disordered accordingly, the abstraction of blood by cupping often answers useful and important purposes, sometimes relieving the case to a greater extent, and with less loss of power, than general blood-letting, and to a greater degree than loss of blood by leeches. But such complication removes the case from the class of regular acute gout cases, and is dealt with accordingly on general principles.

Purgatives and diaphoretics are, then, the evacuates, in which most confidence is to be placed in the treatment of acute gout.

The utility of purgative medicines is now almost universally admitted, opposed as their use is to the opinion of Sydenham,* the question between the

* "For my own part, I am abundantly convinced, from much experience, that *purgings* either with mild or strong cathartics of that kind which are given to purge the joints, proves very prejudicial, whether it be used in the fit to lessen the morbid matter, or in its declension to carry off the remainder, or in a perfect intermission, or healthy state, to prevent an approaching fit. For I have learned at my own peril, as well as that of others, that purgatives exhibited at any of these junctures, have, instead of doing service, hastened the mischief they were intended to prevent. (1.) Purgings, therefore, during the fit, by disturbing nature when she is separating the gouty matter and throwing it off upon the joints, does sometimes eminently disturb the spirits, which renders the fit more violent, and like-

medical men of the present day being simply, as to the degree to which they should be used, and how far they should constitute the means of treatment. All are agreed as to the importance of clearing, satisfactorily, the primæ viæ on the incursion of the paroxysm, and of keeping afterwards a perfectly solvent state of the bowels. The disputed question is, whether purgatives should be made further use of than this; whether they should be used to emulge the great organs, and lower the full and febrile state of the circulation; or whether, having been used to the extent indicated above, the other evacuant and sedative measures should be preferred to purgatives. It is one of those questions,

wise much endangers the life of the patient. (2.) Purgatives administered at the end of a fit, instead of expelling the remains of the disease, occasion a fresh fit, as severe as the former; and thus the patient being deceived by fruitless hopes, brings those mischiefs upon himself, which he had escaped if the humours had not been exasperated afresh. And this inconvenience I myself often experienced, after having had recourse to medicine to expel what I esteemed the remains of the distemper. (3.) As to purging at certain times in the interval, by way of prevention, though it must be owned that there is not so much danger of occasioning a fresh fit, as in the instance just mentioned, the patient in that case not being perfectly recovered, yet, even at this time, it is productive of a fit for the reasons above specified; and though perhaps it may not come on immediately, the disease nevertheless will not go off entirely by taking any purge constantly at proper intervals; for I have known some gouty persons, who, to recover their health, not only purged spring and autumn, but monthly, and even weekly, and yet not one of these escaped the gout, which affected them more severely afterwards, and was accompanied with more violent symptoms than if they had totally forbore medicine. For though such purging might carry off a part of the gouty matter; yet, as it does not at all contribute to strengthen concoction, but rather weakens it, and injures nature afresh, it only strikes at one cause, and is by no means adequate to the cure of the distemper.”—*Sydenham's Works, Swan's Translation*, page 430.

on which individual cases serve as a better guide, than general statements, or broad opinions. It should, however, be stated, that purgatives are better borne in a large majority of gout cases, than probably in the same proportion of the cases of any other disease. Their action commonly relieves much, and exhausts comparatively little; and the irritation their action involves is, in most cases, unimportant, unless they have been used unduly and needlessly. It may be said, that one of the most common features of the gouty habit is the formation of large alvine evacuations; and this may involve, and occasion, the secretion of a large quantity of mucus from the intestinal mucous membrane, which may defend the bowels from being unduly irritated by purgative medicines. The extent to which purgatives are used, and the degree to which they are trusted, in the treatment of gout, must necessarily depend on their effects. Marked irritation, by any medicinal means, whether of the bowels, or of any part of the body, must, of course, be avoided,—as adding to, instead of lessening, the general excitement,—and as risking the superinducing of some secondary disease, in a habit of body, so far generally disturbed and deranged, as to be prone to take on morbid action in any of its structures. In addition to these considerations, however, it is certain, that the irritation of purgatives may influence the local gout, and act injuriously upon it,—diminishing suddenly the local inflammation, and causing the supervention of chronic or irregular,

upon acute gout. This is on no account to be needlessly risked, and need seldom be so, although such cases will probably occur at times in the most careful practice. Undue irritation of the bowels is apt, moreover, to occasion hypercatharsis, which is necessarily hurtful, by diminishing much, and to a very uncertain degree, the general strength, independently of its indirect effect already mentioned, of interfering with the course and intensity of the local gout. When purgatives are found to produce marked irritation or exhaustion, they must, of course, be resorted to more cautiously, and in modified form. In some sensitive systems, purgatives have been known to keep up and aggravate the local gout. These, however, have been cases of irritable, rather than acute gout; in fact, cases of active gout rendered intensely painful and distressing, by a highly susceptible individual organisation, or of gout situated in some peculiarly susceptible part of the system. This has not been frequently observed. The usual purgatives seldom produce unpleasant or undesirable effects at first; and common care will, in most cases, discover sufficient premonitory symptoms, to prevent their being continued improperly.

The more gross the habit of body, the better will purgatives generally be borne. A tumid and not flaccid abdomen will seldom mark a patient, who will not bear a free use of purgatives.

The degree of the general excitement and local inflammation, the disordered or the natural state of

the tongue and the alvine excretions, must chiefly determine the dose, &c., of purgative medicines. To clear the bowels, and emulge freely the abdominal organs, is almost always a safe and useful measure at the commencement of the treatment. For this purpose, a dose of calomel or blue pill is usually an important part of the purgative prescription; and as the combination of the two preparations has generally seemed to be more efficient than either of them separately, it may be well to order them in combination; that is when the depressing effect of the calomel need not be feared, which in acute and regular gout will seldom be the case. It may indeed be stated in broad terms, and perhaps cannot be put in too strong language, that there are few gout cases, and perhaps few gouty habits, in which an occasional dose of calomel is not most useful, and in which the giving such a dose at stated, and it may be, not very distant intervals, will not be found among the most useful means of influencing the gouty action, and mitigating the tendency to it.

Of the ordinary purgatives, the resinous have long held the first place among gout remedies. Of these, jalap, colocynth, gamboge, scammony, and senna, are the most useful. There is probably no better combination than the compound extract of colocynth of the Pharmacopœia,—to which may be added, if necessary, an additional quantity of scammony, or a portion of gamboge, or of extract of jalap. The action of the mercurial and resinous purgatives should generally be aided by a dose

of infusion of senna, to which some purgative salt, as tartrate of soda, or tartrate of potash and soda, or sulphate of magnesia, may, in most cases, be usefully added; and, as such medicines have a tendency, in many cases, and perhaps even especially in gout, to produce flatulence and a sense of chilliness, some simple aromatic and an alkali should usually be added to the dose. This is found to be of much importance. The stomach is unquestionably feeble in most cases of acute gout, and its secretions are usually much disordered; and cold liquids, and liquids in large quantity at a time, and neutral salts, unless qualified by aromatics, or alkalies, or both, are exceedingly apt to derange and disagree.

In cases of acute gout, it will seldom be found that the alvine discharges are in a natural state. There are few cases, in which hardened, and dark-coloured, and imperfectly mixed fæces are not sufficiently remarkable; and until this condition is rectified, it will seldom be found that purgatives, if used with common discretion, are otherwise than useful; and, under such circumstances, they may generally be pushed with some activity. If the bowels have been evidently regular previous to the attack, and the secretions brought away by the first administered purgatives show no marks of lodged or deranged secretions, the further use of purgatives is of questionable propriety, and is seldom warranted; and, in most such cases, they should only be had recourse to afterwards, if cos-

tiveness should supervene. It is one thing, and always necessary in an attack of gout, to ascertain, by an efficient dose of aperient medicine, varied in kind and strength according to the particulars of the case, that there is no lodgment nor accumulated matters in the bowels, and that the liver and mucous membranes are doing their duty, or to determine, as far as inspection of the *fæces* can inform us, in what respect they are not doing so; and it is another thing, and by no means always advisable, to make the *primæ viæ* the means of evacuating the system of its redundancies, or of so far lowering its powers, and influencing the circulation, as to affect the morbid action, and moderate the febrile state. And although it is unquestionable, that, next to the direct abstraction of blood, of which, and its general inapplicability, enough has been said, purgation has the most rapid and decisive effect on the system, acting most directly and efficiently as an evacuant and anti-phlogistic; yet this is, *per se*, in some cases, an objection to purgatives, and, in all, is a reason for care in their use. In cases of doubtful power, when the constitutional energies are not great, or when they have been previously reduced, or when the local gouty action is not fully or adequately manifested, purgatives must be made use of cautiously, or they may, and probably will, be injurious. And in all cases, even when the system seems to be full of power, and to bear their action well,—and even when, in connection with this, the secretions

are disordered, or, if improving under the use of purgatives, have not yet become natural—and this is of course the strongest supposable case for the continued use of purgatives,—the state of the local gout must be carefully watched, and if the purgation should have a marked effect upon it, the use of purgatives should not be persisted in. The local gout must not be materially interfered with; it must be permitted to run its course; and while any extreme degree of local action may be justifiably moderated, and high constitutional excitement may be very properly lessened, by means of medicines; no sudden or rapid effects on the local action are to be desired, or if possible to be risked; and if such occur, they are not to be regarded as indications of sound practice and judicious treatment, but as instances of improper interference with the disease, involving, or at least risking, much worse evils than a fit of acute gout. Yet, to prevent the possibility of mistake, it must be added, that purgatives are the most important of the remedies for acute gout, more trustworthy and useful than any others, and as such are a principal feature in the treatment. Their decided effects, the power that they possess as evacuants and febrifuges, are the strongest recommendations; and contrasting this with the great uncertainty that attends the administration of most other medicinal agents, it is not surprising, that purgatives should be so much used, and so trusted to. But it is from this very circumstance, that they are liable to be used un-

wisely, and to be continued when no longer required, or when positively contra-indicated; and they are not required, when less efficient means are equally useful; and they must be contra-indicated, when they are diminishing sensibly the local gout, or lowering, to any considerable degree, the general powers.

The degree to which the secretions are deranged, will influence the kind, as well as the dose, of purgative that is used; and, in connection with the powers of the system, and the amount of febrile action, will determine the degree to which mercurial, or resinous, or saline, purgatives should be ordered. A system that is full of power on the one hand, or in which there is considerable derangement of secretions on the other, may equally justify the use of mercury; the extent to which it is used, and the preparation preferred, being regulated by the circumstances of the case. When there is sufficient excitement of system, or sufficient derangement of secretions, to demand and justify strong measures, calomel must alone be trusted to. Its influence on the organs is greater and more decisive; and its depressing effect on the circulation is, in most cases, marked and influential. It has already been said, that, if it be a mere question of purgative action, the combination of calomel with blue pill will, probably in most cases, be found to answer the purpose better, than either of these preparations given separately. If these secretions be not sufficiently disordered, nor the powers of the

system sufficiently strong, nor the febrile action sufficiently great, to warrant the exhibition of calomel, blue pill is to be given in its stead; or blue pill may be given instead of a second or third dose of calomel, if farther mercurial influence be desirable, and yet neither the constitutional energies, nor the amount of derangement of the abdominal organs, make the farther exhibition of calomel expedient. It need only be added to this, that, to bring the system under the decided influence of mercury to the extent of ptyalism, however slight, is hardly ever necessary or warrantable, or to be risked, in a case of uncomplicated gout, whether acute, active, chronic, or irregular. And yet, it must be admitted, that, in some few cases, when this has been induced undesignedly, the immediate effect on the gouty action has been, in some degree, satisfactory. But the eventual effects of mercury on the system are too lowering, and they involve a degree of morbid sensitiveness that can rarely be worth incurring, in simple gout, and by no means often worth incurring in complicated gout. To keep up the powers of the system, and to diminish morbid sensitiveness, is too much, and too important an object, in the treatment of gout, not to make this manifest and indisputable. Therefore, although a first, or second, or even third, dose of mercury may be expedient and justifiable, and of great use, in the treatment of a fit of gout, whether given in combination with purgatives, or even given rather with a view to its action on the febrile state, or on the local inflammation, than

because indicated by the morbid condition of the abdominal organs; yet, in this case it is pre-supposed, that the individual's system is not peculiarly susceptible to mercurial influence, and that, as far as may be, ptyalism is avoided.

There is probably no class of medicines, that gains so much by being used in combination with one another, as purgatives; and accordingly, it is seldom that a single one of the class is ordered by itself. This observation is very applicable to gout cases; because it is usually of importance, that the purgatives should act upon the whole of the intestines, whether to remove accumulated matters, which might be mechanical causes of irritation or obstruction, or because, if the system is to be relieved by their action as evacuants, the larger the surface called into increased action, and the greater the number of organs so influenced, the more decidedly efficient will be the result. Of the resinous purgatives, however, it is probable that scammony is the one, which is most useful in acute gout. The dose of purgative medicine, that may commonly be ordered in gout, is greater than the average dose. The organs bear, and usually require, a somewhat larger dose, than is found to be needful in ordinary cases. This is the rule; but there are, of course, many exceptions to it.

There is, perhaps, no practice more objectionable in the treatment of gout, than the needless addition of narcotics to purgative medicines. Unless when called for by morbid sensibility of the stomach or

bowels, by their producing such sensibility, or increasing it, as indicated by flatulence, or tormina, or tenesmus, narcotic medicines should not be added to purgatives, in the ordinary paroxysms of regular gout. It is believed to be beyond a doubt, that narcotics, under such circumstances, commonly do harm; that they interfere, more or less unduly, with the local manifestation, and involve a risk of rendering, or aiding to render, acute gout chronic, or irregular. What is known of the nature of gout, and observed in its history, may be borne in mind, and brought to bear upon this question. If an attack of gout be the final result of the long continued action of predisposing causes; if it be necessarily connected with a peculiar and gradually produced condition of system; if the adequate development of the disease locally be always attended with proportionably good results to the weal of the system,—and its suppression, or inadequate development, when the system has been prepared for that development, be invariably attended with serious and long-continued disturbance and derangement; if, to produce such development, all the organic and nervous energies of the system be required; it follows, that to affect the nervous system ever so slightly with narcotics, of any kind, must be to impair the action and influence of the organic nerves, and to risk an interference with the development or the course of the local gout. It will probably be admitted by the majority of the profession, that these remarks are borne out by the

evidence of cases, and that those in which the use of narcotics has not been required, or in which they have been able to be dispensed with, are, *cæteris paribus*, the cases that have gone on most satisfactorily, and been less frequently followed by, or less frequently degenerated into, chronic gout. Accordingly, it is, perhaps, good practice, to avoid combining narcotics, however mild in character, or moderate in dose, with the purgative or the febrifuge medicines ordered in acute gout; unless they be specially indicated, when, to withhold them, would be attended with greater risk than would follow their exhibition.

The younger the gout, the less frequently or decidedly are narcotics called for, and the stronger should be the indications determining their exhibition. When the attacks of gout have been uniformly regular and acute, whatever risks their degeneration into the less desirable forms of the complaint should, of course, be avoided, with peculiar care. It is admitted, that there are gout cases, in which the disease is acute and regular, that are accompanied by so highly irritable a state of nervous system, so morbidly sensitive a condition of the tissues, such restlessness and sleeplessness, so much greater a degree of mobility, than the local or febrile symptoms explain, or commonly occasion, that narcotics become positively indicated, and probably indispensable, and in which their exhibition is followed by the best results. Under such circumstances, in truth, it becomes necessary to risk what

evil consequences may eventually result from such practice, for the sake of the immediate exigencies of the case. It is, however, very generally true, that, when special medicines are demanded, their effects are in a great degree neutralised by the state of system, for the relief of which they are exhibited. But such cases are really rare. It is admitted, and it is an important feature in the history of gout cases, that repeated attacks of acute gout have a tendency to induce this morbidly sensitive state of nervous system; and this condition of nervous system is a more common attendant on gout, or shews itself more early in the attacks, the less regular and the less acute these attacks become. Therefore, the older the gout, the less acute the gout, the more irregular the attack, the more frequently will narcotics become necessary, and the more readily must they be allowed. But this, important as it is, and true as the history of gout cases shows it to be, does not militate, in any degree, against what has been said respecting the action of narcotics upon gout, the injurious consequences of their exhibition, and the importance of avoiding them if not specially indicated.

This matter assumes a great degree of importance, in discussing the treatment of this disease, from there being differences of opinion upon it, among the best informed members of the profession,—the practice being as different as the opinions. It should be borne in mind, that, as far as we know, or have data on which to form an opinion, gout is a

consequence of sluggish action of the nervous system,—that it seems to depend upon inefficient elimination of the waste of the system, which must depend, in its turn, on imperfect action of the nerves which supply the capillary vessels in which the elimination takes place, inasmuch as the functions of the body are, at least as much, and as absolutely, dependent on the principle of life, as on the physical machinery through which the vital principle acts, and inasmuch as the vital influence is communicated through nerves to the nervous centres. The influence of mind, in warding off or inducing many disordered states, is indicative of this truth,—witness the effect of the emotions and passions in inducing, or suddenly arresting, the development of gouty inflammation. But the almost simultaneous cessation of respiration, circulation, and nutrition, in all its processes of production and expenditure, with the cessation of the organic life, sufficiently proves the effect of the nervous system on all the functions of the body; for, although organic life may exist, as in some of the cold-blooded animals, for a length of time, without air, or food, or any indication that vital processes are going on in the economy, the single proof of such existence being the capability of restoration to motion and instincts, under the influence of heat, air, and nutriment; and as, consequently, organic life may subsist, to all seeming, without organic functions being performed, whereas organic functions cannot be performed without evident

proofs of the operation and existence of organic life, the latter must be superior to the former, and their principal cause. Nerves are necessary to secretion ; they are necessary to the production of every change that takes place in the blood, to its power of depositing or removing every elementary atom : without the nervous influence, nutrition could not take place, the blood would not receive new elementary matters, nor deposit them, nor take away the waste of the organs, nor be influenced by exposure to the air, nor be the direct means of maintaining animal heat, nor the channel by which the waste is expelled from the body. For all these processes, nervous influence is indispensable ; and in proportion as the nervous influence is fully, or but imperfectly exercised, will all these processes be adequately, or imperfectly carried on. Upon sluggish action, then, of the nerves of organic life, or rather of the nerves concerned in the various processes of nutrition, are all the diseases connected with plethora, in all probability, ultimately and really dependent ; and not only so, but upon the active condition of the nervous system must depend the success, or the failure, of any effort made to free itself from any encumbrance, that a long continuance of deficient action has entailed upon it. For the success of the effort made by the system, to localise and develop a paroxysm of gout, the nervous system must necessarily be as vigorous as possible ; and our object should be to add to this vigour, if it were in our power to do so, and not to lessen it. And accord-

ingly, knowing as we do, that whatever greatly interferes with, or decidedly increases, the momentum of the blood, as congestion on the one hand, or febrile or inflammatory action on the other, influences and impairs the energy of the nervous system, it is the great business of the medical man, in the treatment of a fit of gout, to influence and modify either of these conditions, when so far present as to interfere with the character and course of the paroxysm. And, in the same way, must be regarded the course pursued, in cases where any important ailment is complicated with, or engrafted on, or results from gout. This is to be treated, and if possible relieved, as well because it interferes with, and sometimes wholly arrests, the local manifestation of gout, as because it is in itself a cause of disturbance and injury to the system. For the due manifestation of gout, for the development and course of the fit, the nervous system must, in no way, be materially interfered with, neither unduly occupied by other ailments, nor influenced, beyond a certain point, by derangements of the great processes of life, that are essential to the well-doing and the functions of the nervous system itself; and it is at least equally important, that whatever may directly act upon those nerves and their centres, and directly depress their energies, and dull their vital influences, should be avoided. And such is necessarily and essentially the action of narcotics; and therefore should their use be avoided in such cases, unless there be so opposite a condition of those

parts of the nervous system, so morbid a degree of irritation, as interferes with the just exercise of its powers as much as would result from diminished sensibility ; in which case only can narcotics be used safely, or advantageously, as in this case alone do they aid the effort of the constitution, by bringing the nervous system more nearly to a normal condition. If these views be true, and they can hardly be disputed, the general impropriety of administering narcotics in gout must be obvious ; and the kind of case in which they may be used with advantage will be apparent. In such cases, for instance, as those first alluded to, in which there is undue nervous excitement—a degree of irritability that defeats the curative effort, while it necessarily adds to the debilitated condition upon which it is more commonly engrafted ; or in such cases, as are marked by great languor, with, or without, this irritable state, in which the struggle to throw out local gout is evidently too much for the powers of the system, and in which the attendant exhaustion becomes a more important question, than the risk of interfering with the local development of the disease.

It might be rare, that, in cases of acute gout, unattended by either of the conditions just taken notice of, opium, in any of its forms, would be prescribed. But it is probably by no means rare, that the less active narcotics are ordered, as conium or hyoscyamus. Indeed there are some, who think highly of conium as a gout remedy, and prescribe

it as the principal medicine to be used in the treatment of the gouty paroxysm. The only cases in which we have ever known it to do good, or had reason to think it had not done harm, have been cases of much constitutional irritability, or of little power; and, even in these cases, we have had reason to think this mode of treatment may have been unwisely adhered to, and gout, at times, unjustifiably modified by its exhibition. There can be no doubt, that conium acts, in some degree, like the other narcotics upon the nervous system; although it depresses much less than narcotics in general, and does not necessarily interfere with the processes of nutrition; and it is certain that it does interfere in some people with the expenditure of the system, as in the case of those who become fat while using it. Upon what principle conium can be useful in gout, unless by its narcotic powers, it is difficult to say. It may, indeed, be said to act as an absorbent, and thus be supposed to have some specific effect on the capillary vessels; but the powers of conium as an absorbent are, at the best, uncertain, and deserving of little confidence; whereas, its action as a narcotic is quite certain, and renders it objectionable as a remedy, in the large majority of gout cases.

In discussing the practice of combining narcotics with purgatives in the treatment of gout, the most important gout medicine of modern times finds its place for notice. *Colchicum* has come to be one of the principal medicines used in the treatment of

gout; and its having, under one name or another, maintained this position for little less than half a century* is, per se, proof of its efficacy and its usefulness. The medicinal action of colchicum is in part resolvable into two very apparent and very different classes of effects. It is decidedly an evacuant, and as decidedly a narcotic; and its effects may be imitated in these particulars, by combining certain evacuants with narcotics. Its principal evacuant action is purgative. It chiefly acts on the bowels themselves, and especially on the duodenum; but it likewise influences the action of the liver, and probably, more or less, of the whole track of the intestinal canal. In some persons, it invariably induces nausea, and in larger doses, emesis. In most persons, it acts upon the skin, as well as on the mucous membrane of the bowels. Its diaphoretic effect is generally subsequent to its action as a purgative, even when the drug is given alone; when combined with purgatives or with diaphoretics, it is generally determined as to its action by the combination, but by no means always so; and indeed usually there is some diaphoresis consequent on taking colchicum, even when it has been given in combination with purgatives, after the purgative action has ceased; and in some persons, it always acts as a purgative, sometimes to the extent of forbidding its use, how-

* It is now, indeed, generally considered, that colchicum is the *hermodactylus* of the old writers; and under this name, it was used, and recommended strongly by the ancient Greeks.

ever it may be combined with other medicines to counteract this effect. Colchicum likewise acts, in most cases, on the kidneys; and of course the more so, the less quickly it is carried out of the system by the bowels and the skin. Its powers as an evacuant are very considerable, and tolerably uniform; and, unless in cases of peculiar idiosyncrasy, the amount of effect that will result from a definite dose of a given preparation may be predicated with sufficient certainty. Its action is, however, apt to become suddenly excessive, when the doses are unduly large, or the preparation strong, or the doses repeated so often that the medicine is able to accumulate in the system; and consequently, unless the effects of the drug upon an individual are known by experience, it is generally advisable to begin its use by exhibiting it in a mild form, or in less than the average doses, allowing a sufficient interval to elapse between the doses, to diminish, as far as may be, the risk of suddenly-developed and inordinate effects. This becomes, of course, peculiarly important, when the system is not in a high state of vigour, and great and sudden evacuation might occasion an injurious, or perhaps dangerous, degree of exhaustion.

Besides its action as an evacuant, and its action as a narcotic, colchicum has a direct influence on the fibrous tissues; among the rest, as is well known, on those of the heart. Its action on the heart, if the drug is given in a strong form, and in full doses, is generally very considerable. It lowers

the tone of the heart's action, and diminishes the power of its impulses. This effect is not usually so positive in its degree, when the pulse is felt at the wrist, as when the action of the heart itself is examined by the ear or the stethoscope; but it is generally sufficiently obvious. It does not necessarily lessen the rapidity of the heart's action; and, therefore, the effect is different from that of digitalis; and not only do its effects differ to this extent from those of digitalis, for it does not necessarily make the action feeble, fluttering, or easily checked. To attempt to convey the full meaning that is implied, colchicum seems to make the impulses of the heart less sharp, rather than, at least when the effects are not considerable, less strong. This peculiar, and it may be called specific, effect of colchicum upon the fibrous tissues, to which its virtues, as a gout medicine, are unquestionably owing, bears no necessary proportion to its effect as an evacuant; and it cannot, therefore, be ascribed to its evacuating properties; nor does it necessarily involve any degree of nausea, so that it cannot be classed with antimony or ipecacuanha; nor does it even seem to involve any necessary depression of the other powers of the system. There are, however, in general, some of its other effects manifested at the same time; the person being usually, in some degree, under the influence of its action as an evacuant, or as a narcotic; there being, perhaps, more or less of catharsis, or of diaphoresis, or of diuresis, with or without a sense of drowsiness, more or less like the stupor conse-

quent on taking one of the more decided narcotics. This sensible degree of narcotism, whether manifested or not to the extent of inducing sleep, is usually very perceptible to the patient, and, indeed, often discernible in the aspect of his countenance. The specific effect of colchicum on the fibrous tissues, is not to be regarded, then, as a consequence of its evacuating, nor of its narcotic powers, nor as resulting from their combination, but is, in its degree, quite independent of those powers and their effects, and, in its influence on the system, is quite *sui generis*, and not to be imitated by any other known drug. To this property, colchicum owes its power over gout, and rheumatism, and certain affections of the heart, and every disease involving febrile and inflammatory excitement, quite independently of its other effects on the system; and indeed so distinct and independent are these effects, as to have long led us to think, that they must depend upon different contained principles, that may one day be separated, and offered to our use in the three differently acting principles, one being evacuant, a second narcotic, and a third sedative. Should this ever happen, it is believed that it will prove an immense boon to the sufferers from the diseases, for the relief of which colchicum is now so much given, and with which its action as an evacuant often interferes, and to which its action as a narcotic is often of the greatest disadvantage, and which, as will have to be urged, should often, in many gout cases especially, involve its very cautious use, or entire prohi-

bition. Whether owing to its action as a sedative, or as a narcotic, or as an evacuant, or to its combined effects, the ultimate effects of colchicum are debilitating to a considerable degree. It has been supposed, that it produces chemical changes in the blood itself, lowering its character as a nutrient to the system. However this may be, the facts remain unquestioned; and, in some cases, it may influence the degree to which it is administered, or involve its being properly withheld altogether. The action of colchicum, notwithstanding that much has been written to the contrary, must be said to be more decided and greater on the local manifestation of gout, and the inflammatory character of the paroxysm, than on the constitutional condition upon which gout depends, and of which the localised ailment is only a form and development. It is a fact, which defies contradiction, that gout proceeds on its course, being no less present in the system, although it be modified in its form and degree, although colchicum be given early in the case, and given perseveringly,—the system, from idiosyncrasy, or from its originally large degree of power, tolerating the drug well, and not being unduly, or perhaps even very sensibly, lowered by it; nay, further, that, in such cases, the so-called specific for gout,—whereas, it should be said, specific for gouty inflammation, or, at furthest, for gouty localisation,—is given with the probable result, which may be said to amount to a certainty, that, supposing the drug answers the full purpose of

preventing the manifestation of local gouty action, it will accelerate, instead of check, the advance of the confirmed gouty habit of body, and of that alteration in the character of the blood, and the tendency to crystallisable deposition in the fibrous tissue, which is its most unhappy and desperate consequence. It would, then, be as much a mistake, to consider, that, in relieving the inflammation of a paroxysm of gout, colchicum has the effect of curing and removing the disease, as to think that gout is simply a local inflammation. Colchicum does not influence, any further than its action as an evacuant may possibly have such effect, the condition of the body, that is the proximate cause of gout; nor does it influence, further than this, the plethoric state, which is its predisponent cause. Its specific action is confined to the fibrous tissues, upon an inflammatory or excited condition of which, it exercises great power, being, when used for this purpose, and when the relief for such a condition is the justifiable aim of such prescription, a most valuable drug, the effect of which may generally be calculated upon with as much certainty, as the effect of any other medicinal agent. But, ordered when the paroxysm of gout, with its local inflammation of specific character, is a less evil than the habit of body for which it is the natural mode of relief, and when the interference with such paroxysm involves the increase of the greater evil,—risking not only the conversion of acute into irregular, or chronic gout, but the consequent deposition of chalky matter in the

joints, &c., and all the resulting evils of such deposition,—colchicum becomes an unjustifiable means of treatment, one that indirectly produces a greater evil than it relieves. This, which is truly the abuse of a most valuable and important medicine, has not only interfered largely with the reputation of colchicum, leading, as such abuse has often and obviously done, to such manifest and destructive results; but it has led to a fear of it, on the part of many gouty people, and of some medical men, that has prevented it from being had recourse to, when really indicated, and when its administration would have been useful.

That neglect of such considerations, has led to an enormous amount of evil to gout cases, is beyond all doubt or question; that the indiscriminate exhibition of colchicum, in all sorts and stages of gout cases,—a practice which has been, and is, more general, than may at first sight be admitted or believed,—has converted, prematurely, many cases of acute, into chronic, or irregular gout, is undeniable; and that, in this way, colchicum has, indeed, been the direct means of producing the crippled limbs, and all the numberless evils of irregular gout, that are so often ascribed to it, is believed to be true. But, to say that this, the abuse, or empirical use of colchicum, is an argument against its careful and discriminating administration, would be as extreme and impolitic, as to expunge mercury from the pharmacopœia, because, if unwisely given, it may produce as bad, or worse diseases, than it has the power of curing.

When the powers of the nervous system are unimpaired, and it is not in a state of morbid sensibility,—when the physical energies have not yielded to the disease,—or when the secreting organs are decidedly and considerably deranged or defective in their action,—colchicum should either not be given, or only given in combination with other medicines; and the dose should be as moderate, as the propriety of giving it at all may happen to be doubtful. There are some few gout cases, in which the exhibition of colchicum is never required in any of the paroxysms; and there are some cases, in which it can never be dispensed with. There are few cases of early gout, if acute and uncomplicated, in which the use of colchicum may not be withheld,—and in which the development of the disease, being less interfered with, is not thus enabled to be more perfect,—and the relief to the system is not so much greater,—and the risk of the speedy return of the paroxysm, or of the case degenerating into chronic gout, is not so much less. There are few cases of acute gout,—whether the gout be early, or the attacks have been so numerous and so frequent, as to have influenced largely the constitution,—in which colchicum is justifiably exhibited at the commencement of the paroxysm, or until after the febrile action has been somewhat influenced and moderated, and the local inflammation has fully developed itself, or has even begun to wane. The longer it is expedient to defer its exhibition, the more satisfactory will be the effects of the paroxysm upon the

system, and the less the danger of its being followed by chronic or irregular gout. But this may be carried too far; and we are not contending against the use of colchicum, but against its unnecessary and injudicious exhibition.

General and local gout, if unchecked, often becomes a most formidable complaint: formidable in its violence, and in the extent of its devastations. The long-continued, and very great distention of the part or parts that are affected with the inflammatory action, is often followed by much, and sometimes long-continued, local weakness, or occasionally by permanent mischief to the affected structures, and the neighbouring tissues; the system, at the same time, becoming greatly exhausted, the various functions much disturbed and deranged, the nervous system much shattered and morbidly sensitive, and the whole of the economy reduced so much below par, as to require time and great care for its restoration, even if it ever regain its natural condition, and some serious changes be not induced in a system so prepared for them. These are evils that are little less to be deprecated, and to be shunned at least as much, as those which have been referred to the abuse of colchicum; they are the evils which notoriously beset the gouty in former times, from which the introduction and use of colchicum has well-nigh freed the victims of the disease, and which even the extreme degree to which the drug is abused, by no means counterbalances. But the use and abuse of colchicum are happily two very

different questions, which need not be confounded, and which it is believed that a little attention and care might separate very widely.

Supposing local gout to be extremely acute and intense in its character,—the pain, or the swelling, or the heat, to be very great, especially if the three characters are combined in the same case,—and supposing that, in connection with this, the stomach and bowels have been already cleared by purgatives, and found to be by no means, or but slightly, disordered in their functions,—the exhibition of colchicum may become immediately important, to restrain the undue severity of the local inflammation, and diminish the risk of great local debility, or much local mischief, being produced. If the pain be very great, though there be little or no swelling, and no sensibly increased heat of the part, the local disturbance still being considerable, although deep-seated, and confined to the tissues farthest from the surface, the early exhibition of colchicum may be a paramount necessity. The more frequent the fits of gout may have been, the more severe their character, or the more the tone of the system may have been reduced, and the more of chronic gout there may have been in the parts that are affected with the acute gout, the earlier in the paroxysm will the use of colchicum be required, and the more confidently may it be exhibited.

Colchicum relieves the local inflammation of gout to a degree, that, were it not for the consequences of so checking the inflammatory development of

the disease, would entitle it to be called the specific against gout, which, on its first introduction, it was hoped and believed that it would prove. If gout were not strictly a disease of the constitution at large, and were it merely a local affection, colchicum would justly deserve the name of its specific antagonist. But, as has been said so often, this is by no means the case; and the usefulness of colchicum on the disease is confined to that of modifying or arresting the local consequences of the gouty condition, when those consequences are such as to risk local disorganisation,—or the undue expenditure of the powers of the system, by the general excitement inseparable from the local disturbance. The local inflammation is not, strictly speaking, gout, but the primary consequence of the excess of goutiness, the proof that the extreme point of the system's endurance of the morbid condition, which is really gout, has been reached and exceeded. And it is only for this primary consequence of gout, for the local disturbance occasioned by it, that colchicum is to be accounted a specific; and, inasmuch as this disturbance is, to a certain extent, a less evil than its cause; and since, as far as it goes, it relieves the system from gout; it follows, that the local state may be most unwisely acted upon by colchicum, and that it should be only prescribed, when the local disturbance becomes, in its turn, a greater, or more immediately important evil, than the gouty condition which gave it origin. If these views be sound,—

and that they are so, is believed to be proved by every case of the disease that is met with,—the action of colchicum is reduced to its influence on the local manifestation of the gouty condition, or on the local consequences of that manifestation; and the circumstances in which it should be given, and in which it should be withheld, become reduced to a much narrower, although still an extensive, range of gouty conditions and states. It follows, that the use of colchicum in gout cases is confined to the paroxysm of the disease, to its sequelæ, and its prevention. There may be circumstances, in which it becomes politic and right to endeavour to ward off, or prevent altogether, or greatly lessen, the amount of a fit of gout. Such cases are occasionally met with; and especially in the old and much worse sufferers from the disease, in whom the waste of power, and of nervous energy, that always attends so much increased action, might occasion undue exhaustion, or even death. And so much power has this wonderful drug on gouty action, that it enables us, in a very great degree, to prevent, relieve, or modify, its manifestation. In such cases, it is to be understood, that the disease itself is, nevertheless, progressing; and, in fact, under such circumstances, it is common to find tangible proofs, that it is doing so, although, perhaps, without any sensible disturbance of the parts in which these proofs are being deposited: large collections of chalk, &c., are often found in such cases, in tissues that had neither been the seat of

pain, nor of any degree of perceptibly increased action. Colchicum does not, then, act upon the gout, nor upon its progress, but only prevents it from expending its redundancies in the usual way, through the medium of local inflammation of specific character.

A good deal has been said of the effect of colchicum on the paroxysm itself,—on the relief it affords to the pain, to the inflammatory state, and to the resulting febrile action,—and on the risk of increasing the gouty condition, in the same proportion as the paroxysm is interfered with. It remains to be said, that, if it be thought advisable to administer colchicum, at any given stage of the paroxysm, its effect on the constitutional goutiness must be kept in mind, and the influence of the drug on the system must thereafter be maintained, more or less, but always in some degree, until the subsidence of the paroxysm, and, in many cases, for some time afterwards; and this for the reason, that a renewed manifestation of gouty inflammation, after a very recent attack has been suppressed, or modified, by means of colchicum, is generally very severe, very detrimental to the general system and the parts affected, and is therefore to be avoided with peculiar care; in fact, until the state of system has undergone the gradual but great influence of such an interval of time, as restores its equilibrium and its tone.

This influence of colchicum on the sequelæ of the fit, and in diminishing greatly the risk of its

return, may be secured, in most cases, by very small or moderate doses of the drug. And the less that we give, the less do we injure the system by the effects that a powerful evacuant, narcotic, and sedative, must have upon it; more particularly when the condition, for the relief of which it was exhibited, has ceased, or all but ceased, to exist. It must be recollected, that the consequences of exhibiting colchicum are not confined to those it exerts on the gouty condition, but includes those effects which it would have on any system, whether gouty or not; and the probability is, that these latter effects become more considerable, as the morbid state, to which the medicine is antagonist, becomes less violent; and, therefore, while the importance of keeping up the effects of colchicum in some degree, where it may almost seem to be no longer required by local symptoms, is to be borne in mind, its effect as a generally debilitating and depressing medicine must likewise be thought of, and the dose kept at the minimum accordingly.

The effect of colchicum upon rheumatism furnishes strong negative proofs of the correctness of the above observations. Rheumatism is an inflammation of the fibrous tissues; but it differs from gout, inasmuch, as has been elsewhere said, as the disease is less specifically localised, and involves, even in early cases, extensive surfaces of these tissues, and often many situations at the same time. The extent of its influence is well shown, in the degree to which the fibrous tissues lining and covering the

heart, are so often involved in the inflammatory action, and the very large proportion of rheumatic cases in which the cardiac tissues are more or less affected. Rheumatism is indeed an inflammatory condition of the fibrous tissues, varying in degree from acute to chronic, in seat from the fascia and the aponeurosis of the muscles, to the fibrous tissue of the articulations, or the fibrous covering of the bones ; the localisation of disease in one or other of these being much influenced, if not usually determined, by the habit of body and the circumstances of the case, as scrofula, or mercury, or syphilis, may or may not, influence or taint the constitution. Further : rheumatism has no such special and specific consequence as the deposition of lithate of soda ; and this circumstance may, and probably does, make all the difference between gout and rheumatism, as to the propriety of withholding or giving colchicum, in most of the early cases of either disease. In the case of gout, the effect of colchicum is, as in the case of rheumatism, to check or arrest the inflammatory action. In rheumatism, this answers no eventually undesirable purpose, interferes with no result, and leads to no deposition of foreign and little-absorbable matter in the affected tissue. In gout, the inflammation is equally relieved, as it is in rheumatism ; but this inflammation has a certain duty to perform, a specific condition of the blood to correct, a peculiar and morbid state of system to relieve ; and if not permitted to do this, the morbid state remains,—

no matter how far and completely to all appearance the patient may for the time be restored to health, this state remains,—and, sooner or later, proves that it has done so, by some irregular or chronic or acute demonstration; in the one case, leading to many, and often severe and dangerous, forms of illness; in the other, to the throwing down in the tissue affected a much larger quantity, and denser character, of the specific and foreign matter, than is ever the consequence of acute and normal gouty inflammation; and in the last case, producing a relapse of the fit, and in a system that has been necessarily more or less deprived of its power in the previous, and, by means of colchicum aborted, effort, and by so much is less equal to carry on the attack to a quick and satisfactory termination, and prove likely to leave the chronic form of the disease, instead of health, as its sequela. The degree to which colchicum may and must be given in rheumatism, especially articular rheumatism, and more especially when the fibrous tissues of the heart are involved in the inflammatory action; the promptness with which it should follow the preliminary doses of calomel and purgatives; the steadiness and freedom with which it should be exhibited; the length of time during which it should be continued, in lessening doses, until the heart affection and the state of the joints, evidently render it no longer needful; and that colchicum should be made the sheet-anchor in these cases, and not calomel and the lancet,—these being auxiliary, and only auxiliary,

to the specific means of relieving fibrous inflammation; these are truths that will, every year, be known and felt more and more. But gout is not rheumatism; gout is much more than an inflammation of the fibrous tissues; the sequelæ of gouty inflammation must never be lost sight of; and colchicum ought only to be given in gout cases, as an evil that cannot be justifiably avoided,—as in cases of long standing,—or when the cardiac tissues are involved,—or when the seat of gouty inflammation involves the risk of life, or of much and serious mischief,—or when the strength of the individual, the powers of the nervous system, the amount of the gout, or other circumstances, render him unable to contend with the disease, that has been, or is to be, set up, without greater risk, than the suppression or checking of the disease, with all its consequences of deposition, &c., can involve. It is a mistake, in toto, to contend, that colchicum can do more than influence the fibrous inflammation of gout; that, however given, it can prevent the attacks of the disease, or lessen, in any degree, the amount of its results. Colchicum may arrest or diminish the violence of the acute inflammation; but, in the same proportion, it renders the disease irregular, or chronic, or masked, and ready to manifest itself at the first opportunity, and in the readiest way; and, in the same proportion, does it possibly produce a greater evil, than that which it remedies, and involve a greater eventual consequence, a larger amount of crippling deposit, than would otherwise

be produced. Colchicum is more of a specific for rheumatism, because rheumatism is more a simple inflammation, to relieve which is to cure the disease ; whereas, to relieve the inflammation of gout, is by no means, necessarily, to cure gout, but, on the contrary, may be directly to increase it. The worst cases of gouty deposition and gouty crippling, and of irregular and chronic gout, are distinctly traceable to the use, or, if the word be preferred, the abuse, of colchicum. Gouty concretions, with all their evil consequences to the movements of the joints, and the locomotive powers of the individual, are seldom found, when colchicum, or some similar sedative, has not been taken ; and, however given,—no matter at what stage, or after what preliminary measures, or how long continued, so as to influence the whole phenomena of the paroxysm, and its sequelæ,—the effect of colchicum on gout, is to increase the probability of deposition and its amount, or to induce a gout that is irregular or chronic in its character ; admitting, of course, as must be done, that the degree of this risk, or we may say this certainty, is diminished by the use of judicious preliminary means, and by continuing the use of colchicum, when once begun, until the paroxysm and its sequelæ have apparently passed away.

We have chiefly made use of three preparations of colchicum, viz. the wine of the seeds, the wine of the root, and the acetic extract ; using, occasionally, but by no means often, the acetum col-

chici. To produce the full effect of the drug, when this is required, as in the case of acute gout, one or other of the wines is generally preferable. The wine of the seeds is usually more purgative than the wine of the root; and this, in its turn, is more narcotic than the wine of the seeds. The proportionate doses of the two wines is probably as two to three; twenty minims of the wine of the seeds being commonly equivalent in effect, to thirty minims of the wine of the root. The greater the degree of inflammation and general fever, the stronger the reason, in most cases, for giving the preference to the wine of the seeds; and the greater the irritability, and the less the powers of the system, the stronger the reason for preferring the wine of the root. There are occasionally met with, cases of peculiar idiosyncrasy, as regards the effects of these two preparations. Some are not at all influenced, or at least not influenced as far as the gouty action is concerned, by the one preparation, although as sensitive as the generality of systems to the effects of the other. Such cases are seldom met with. It is often well to combine the two preparations; more especially, when the effects of the drug are eminently indicated. There are some few cases, in which a strong preparation of colchicum is required, yet in which neither of the above preparations is found to agree. They are generally cases, in which the bowels are highly susceptible to the purgative principle of colchicum, and a state, perhaps, amounting to hypercatharsis,

or approaching to it, is produced by either of the wines. In many of these cases, the acetum colchici will be found to be free from this objectionable effect. But it is not, on this account, deserving of general preference to the wines; because it is, we believe, more variable in its effects, and less to be depended upon in producing the specific effect of colchicum on the paroxysm. In cases, however, in which it can be ascertained, that the bowels are subject to be unduly acted upon by aperient medicines, or in which gastric or intestinal irritation accompanies the gout attack, and colchicum, is, nevertheless, thought necessary or advisable, it is generally well to prefer the acetum, or its extract, to either of the other two preparations.

Usually, indeed, gastro-intestinal disturbance more or less contra-indicates the use of colchicum; and, unless urgently called for by the circumstances of the case, it will be expedient to diminish the gastro-enteric disorder, by mercurials, opiates, &c., before using colchicum at all. It hardly need be added, that the supervention of decided catharsis on the use of colchicum, is, almost always, a reason for intermitting the use of the drug for a time, or at least for administering it in a milder form, or smaller dose. For the prevention of the fit, and for the treatment of its sequelæ, the acetic extract of colchicum is, in a large majority of cases, the preparation to be preferred; and in such cases, as, from deficient power, or peculiar susceptibility, small doses of the drug would be ordered, and a moderate

effect only wished for, this preparation is unquestionably to be made use of. Neither active enough, nor prompt enough in its action, nor, perhaps, certain enough in the amount of its effects, to justify our depending upon it in acute and violent paroxysms of gout,—in the less acute or the active, in the chronic and irregular forms of the disease, when the effects of this drug are desired, the acetic extract seldom fails to be powerful enough, and rarely annoys, or produces serious or alarming symptoms, by the sudden development of inordinate effects, which is an occasional consequence of the use of any of the other preparations, however carefully they may be exhibited, or however judiciously they may be combined with other aiding, or modifying, or in some degree counteracting, medicines. It will be found to occur very rarely, that any of the three more active preparations need be resorted to, excepting during the violence of an acute or active paroxysm of gout.*

Acetum colchici, as regards its effects, appears to be of the same strength as the wine of the seeds. The dose may be from fifteen to sixty minims, repeated according to circumstances. Of the acetic extract, the dose is from half a grain to three grains, repeated as required.

It is very seldom found to be desirable to admi-

* It need hardly be observed, how important it is, in the case of this, and other active extracts, to the power of which so much is entrusted, that they should be carefully prepared, and as carefully preserved; and that, other things being equal, the more recently they have been made, the more trustworthy must they be.

nister colchicum by itself; purgatives, mercurials, narcotics, alkalies, diaphoretics, stimulants, or tonics, being usually exhibited along with it, according to the circumstances of the case; and, thus combined with other medicines of decided and active character, its effects may be more or less modified, according to the indications of the case. There may be so much nervous irritation as to indicate the propriety of aiding the narcotic influence, and checking the purgative action of colchicum, by the addition of opium; or so much languor, as to make it advisable to conjoin the diffusible, or the more permanent stimulants with it; or so much inflammatory action, general and local, as to make the addition of purgatives desirable; or so much fever, the bowels having been already, perhaps, sufficiently acted upon, as to make the combination of diaphoretic and febrifuge medicines with it, desirable. The mixture of any of the preparations of colchicum with saline or resinous purgatives, or with some of the preparations of opium, or with antimonials or other diaphoretics, or with ammonia, or with mercurials, or with tonics, become so many means of influencing and altering the action of this great medicine on the case,—bearing in mind, however, that no amount of added purgative will render colchicum no longer narcotic, and no amount of narcotic will render colchicum no longer evacuant.

From the old hypothesis, that gout is a disease chiefly dependent for its effects on the undue generation of acid,—from the known tendency of the urine

to deposit acid salts in large quantities after the gouty paroxysm, or often during the paroxysm, or from any derangement of the gouty habit of body,—and from the long-known composition of the gouty concretions,—alkalies have long been regarded as among the most important of gout medicines, and have been exhibited in all periods of the complaint, and in all its varieties; and, no doubt, in a very large majority of cases, with good effect; and very rarely with any injurious results. They are, however, sometimes used unduly, and sometimes unwisely. It should be remembered, that the long-continued use of alkalies is always debilitating; and that their excessive use is irritating to the tissues in general, but particularly to the mucous membranes. Given with moderate care, as to the dose, as to the length of time their use is persevered in, as to the powers of the system, and as to the special indications of redundant acidification, alkalies constitute a very useful class of medicines, and a class that deservedly appears in a large majority of the recipes in gout cases. The mixed carbonates, or the mixture of certain proportions of the carbonates of soda, potassa, and magnesia, or of the carbonates of soda, potassa, and ammonia*, is a very useful

* One part of the bicarbonate of potassa to two parts of sesquicarbonate of soda and three parts of carbonate of magnesia, or one part of carbonate of ammonia to two parts of bicarbonate of potassa and three parts of sesquicarbonate of soda, are good proportions. There is a slight risk in using soda alone, lest, in passing off by the kidneys in combination with lithic acid, it form vesical concretions of lithate of soda. It is generally well to combine sesquicarbonate of soda with carbonate of potassa, or with carbonate of ammonia. The advantage of exhibiting soda in

way of exhibiting alkali in gout cases, and one that is well worthy of being particularly noticed.

The effects of alkaline medicines on gout are always of secondary importance; and they are possibly more useful on the common principle of their action on the economy, in relieving derangements of the gastric or intestinal secretions, and preventing such deranged secretions from acting upon and irritating the mucous membrane they pass over, by the neutralisation of their excessive acidity, than in any other way. They may, however, directly influence the state of the blood, in these, as in other cases; and there certainly seemed, from some of the reports of the cases of epidemic cholera, which occurred in this country some years ago, to be reason to think, that alkalies may directly affect the condition of the blood;—or they may, indirectly, by combining with and neutralising lactic acid, prevent this from seizing upon the alkali of the system, and so diminish the probability of the little-soluble lithic acid, instead of the comparatively soluble lithates, being formed in the capillaries. The two last modes of action are, however, problematical; the effect of alkalies on the *primæ viæ* is obviously useful and important, in a large majority of gout cases; and they influence the urinary secretion, in many cases, when it is charged with an excess of acid salts; and, thus far, their action is open to proof, and this warrants and justifies their

addition to the other alkalies, is, that it often seems to influence the condition of the urine more directly, and permanently, than either potassa or ammonia, exhibited by themselves.

exhibition when apparently indicated, or their being made use of in smaller doses when not contraindicated, provided that such cases are narrowly watched. Alkalies are, of course, seldom given alone in the gouty paroxysm, but are usually exhibited in combination with other medicines. Alkalies are, in almost all cases, given, when colchicum is prescribed, and evidently answer a good purpose, by lessening the amount of the irritative effect of colchicum on the stomach and bowels.

The principal use of alkalies in the treatment of gout cases, especially in the management of the gouty paroxysms, being thought to be that of rectifying the disordered state of the gastric and intestinal secretions, and lessening the risk of irritation to the tissues they pass over, adding, as this necessarily would, to the general derangement of the system, it follows, that there are cases in which alkalies should not be given, and indeed in which the condition of the stomach requires the exhibition of acids; and it perhaps follows, that the ulterior effects of acids on gout cases are probably by no means so formidable, or so important, as they are very generally supposed to be. Cases requiring the use of the vegetable acids will not be found to constitute a large proportion of the mass of gout cases; but there will probably be a considerable number, in which there is the greatest, and most marked amount of relief, from the exhibition of these acids; the most convenient and pleasant way of taking them, being generally as lemonade or orangeade, provided that these are not much sweetened, and not taken in undue quantity ;

or with some carbonate of potassa, or carbonate of ammonia, adding a sufficient quantity of lemon juice, or citric acid, to give a decided excess of acid, forms a very grateful mode of exhibition. In these cases, there is usually more of sickness and vomiting, than of flatulence and eructation, or of redundant or deranged gastric secretions; and with this, there is often a good deal of obstinacy of the bowels. But there is much difference in these respects; and sometimes acids are proved to be really indicated, and alkalies to be injurious, when the gastric secretions are already, to all seeming, redundant, and even surcharged with acidity. The practice in such cases must be confessed to be usually empirical; the only means in our power being, to watch the effects of the medicines administered, and to vary them if not found to answer the purpose. The strongly expressed wishes for acids of the patients themselves, often guide the practitioner, although not influencing so far, as to make alkalies be discontinued if found to agree, or acids allowed if specially contra-indicated. The question is of much more moment and interest, with reference to the general management, dietetic and medicinal, of the gouty habit, than with reference to the treatment of the paroxysm itself; and it may be observed here, although somewhat out of place, that alkalies have, beyond a doubt, been too much used, made too much a *sine quâ non*, in gout cases, and the use of acids too strictly prohibited. What is injurious to one man, is often useful to another, and vice versâ. It is an observation applicable to all diseases, as

well as to a state of health, and might often be usefully remembered in the medical and dietetic management of almost every disease. It is strictly and frequently applicable to gout; and general rules must be laid down and received, as being liable to many exceptions, not always to be accounted for. But the general propriety of giving alkaline medicines in the gouty paroxysm cannot be questioned, nor the benefit that follows their exhibition, whether this be singly ascribable to their immediate action on the deranged secretions of the *primæ viæ*, or not, being left an open question.

The carbonates of soda and potassa are, of course, to be preferred, when the effect of the alkali is principally desired in the stomach and upper bowels, the system being, at the same time, in a state of febrile excitement, or not; carbonate of ammonia being preferred, if the powers of the system are flagging, or the case may not contraindicate the exhibition of so light a diffusible stimulant; and carbonate of magnesia being given alone, or more commonly in combination with one or two of the others, when it is desired to correct a morbid condition of the secretions of the lower, as well as of the upper, bowels. And thus, when the strong and directly irritating preparations of colchicum are being administered, which may act injuriously upon the stomach and bowels, by inducing too much action of the secreting organs, and eliciting, or, perhaps, by the excessive action rendering, the secretions morbid, the combination of the drug with alkalies is found to be of great

value, often enabling colchicum to be exhibited, when it could not otherwise be made use of, or allowing it to be given in doses, that, as far as regards its local action on the stomach and intestines, would be otherwise excessive, although possibly required by the state of the gouty inflammation. The same remark applies, although less forcibly, to the effect of adding alkalies to simple purgatives ; inasmuch as they often assist the amount of action produced by the purgative, while they diminish the irritation of the bowels, produced by the morbid secretion passing over their mucous surface. The dose of alkali ordered will depend much on the effects expected from it. If merely given as an addition to other medicines, and their use be of only possible, and not directly indicated, advantage, the dose should be small ; if given to modify the effect of colchicum, or other acrid medicines, or to correct marked disturbance of stomach and bowels, and consequent derangement of their secretions, or to influence derangement of the urine, the dose must be proportioned to the strength of the indication ; it being borne in mind, that, if given in excessive doses, alkalies become a direct irritant to the mucous tissues, and if prescribed needlessly, or in such quantity as is not required to meet some deranged condition, alkalies always debilitate, and in this way are often the important, and the long unsuspected cause, of very serious mischief.

The pure alkalies ought seldom to be given,

however largely diluted, or however their action may be modified by combination with other medicines. They are apt to irritate directly the mucous membranes ; and there rarely occur indications for the exhibition of alkaline medicines, which the use of the carbonates does not fulfil. In cases where alkalies are evidently indicated, and yet there is more or less mucous membrane irritation existing, or a marked tendency to it, carbonate of soda is to be preferred to carbonate of potassa. In extreme cases of this kind, however, even carbonate of soda, administered in very small doses, and largely diluted, and in combination with medicines having the direct purpose of allaying the mucous irritation, sometimes does harm ; and, however apparently indicated otherwise, it will frequently be found expedient to withhold the use of alkalies, or suspend their exhibition, until the irritative condition has been subdued. When, however, the morbid sensibility of the mucous tissues is so considerable, it will generally be found, that a long time must elapse, after the irritation has been to all seeming relieved, before the use of alkalies, or other direct irritants, can be borne, without increase of the disturbance.

Diaphoretics occupy a very important, and prominent position, in the treatment of the gouty paroxysm. When the state of the stomach and bowels has been ascertained, by the exhibition of appropriate purgatives, and any risk of intestinal lodgment, obstruction, or accumulation avoided, or

removed,—and whether the case be, or be not, one, in which it is thought expedient to follow up this important preliminary in the treatment of a fit of gout, by the use of colchicum,—diaphoretics constitute the medicines upon which, in a large majority of cases, the treatment comes to be principally thrown. Their well-known effect in diminishing febrile action, lessening nervous irritation, reducing the violent action of the heart and arteries, and moderating the rapidity of the pulse, diminishing or relieving local congestions, determining the blood to the capillaries of the surface, and by so much relieving the full state of the blood-vessels of the internal parts,—and all this independently of their action as a gentle evacuant, by increasing the amount of perspiration,—are so many strong reasons for exhibiting them in the gouty paroxysm, and so many feasible explanations of the way in which their use proves so serviceable. And when given with colchicum, by determining it to the skin, increasing the probability of its evacuant action being chiefly from the skin, and diminishing the chance of its action being purgative, these medicines often enable colchicum to be given, when it would otherwise be contra-indicated, or given in doses that would not otherwise be borne. The effect of evacuants which act on the secretions of the surface, is generally less exhausting, than that of the other modes of evacuation, particularly than that of purgatives; and so far from irritating, which is so commonly the consequence of cathartic action,

these generally soothe the nervous system, and diminish its excitability. Hence, in the less acute forms of the gouty paroxysm, and in its less acute stages, when inflammatory action does not run so high, or the febrile condition is not so extreme, diaphoretics constitute the safest, and in many cases they are the only form, in which evacuant action may be maintained.

The peculiarities of the case, and the powers of the constitution, and the amount of effect desired, must regulate the medicine to be used, its dose, and the form of its exhibition. The mildest of the diaphoretics is probably the old Mindererus' spirit, to which may be added a preparation of antimony, or of ipecacuanha, or of colchicum, or opiates, or mercurials, as may be indicated. It is not often desirable to excite vomiting in the paroxysm of gout: the risk that may attend the great and immediate disturbance of the circulation, or that the subsequent exhaustion may produce, is generally such, as to make the exhibition of emetics undesirable.

We occasionally, however, see cases, as when the fit has followed an inordinate meal of food, in which the exhibition of an emetic may be useful. But, generally, the doses of diaphoretic medicines should be, at the most, such as will cause a sense of decided sickness, without vomiting; and when so given, the effect of these medicines on acute gout is very great, and satisfactory; often enabling the use of colchicum to be dispensed with, to the great

eventual benefit of the patient, on the principle, so much insisted upon, of not interfering, unnecessarily, with the gouty manifestation. Without the free use of diaphoretic medicines,—of course subsequent, or perhaps auxiliary, to the use of purgatives,—gout, in its acute form, could rarely be dealt with or managed, without the use of colchicum, or of some equally active, and, perhaps, equally undesirable means (mercury and narcotics, to wit) of moderating the local and general disturbance. The effect of simple diaphoretics, or diaphoretics in which there is no direct narcotic principle, is to moderate general and local action; while there is little risk of undue interference with the local gout, or of repressing its manifestation. Hence, they may be largely used in most cases of acute gout, and more moderately in almost every stage or degree of the paroxysm; and, when colchicum is given, are most useful in modifying its effects, and so far aiding its action as a febrifuge and an evacuant, as to render smaller doses of the drug necessary, than would be otherwise indispensable.

There are, of course, many differences in different cases, as to which of the diaphoretics is best borne, and as to the doses which may be prescribed, without producing vomiting, and with adequate results in other respects. In some, the preparations of antimony, in others those of ipecacuanha, are the better borne. In either case, it should be remembered, that there is much of habit as to the degree, in which this class of medicines

is tolerated by the stomach; and, therefore, it is generally well to begin their exhibition, by giving very small doses, gradually increasing them according to their effects. In this way, very large doses of antimony are often borne after twelve or twenty-four hours, that would have acted, to all intents and purposes, as an emetic, if ventured upon in the first instance. A recollection of this, at the bedside, is often important, emboldening us to give little heed to the accounts of patients, as to their extreme susceptibility to medicines of this class, and enabling us to use them to a degree, otherwise impracticable; and, with distinct reference to their power, in diminishing the necessity for exhibiting colchicum or narcotics, or in rendering smaller doses of colchicum sufficient, and in so far lessening the risk of interfering unduly with the gouty paroxysm, this is a matter of anything but second-rate importance. Where there is morbid sensibility of the stomach, or a marked degree of stomach derangement, ipecacuanha will be usually better borne, and its use prove, in every way, less objectionable, than that of antimony; but when there is great general feverishness, or a very decided degree of inflammatory action, antimonials are greatly to be preferred, if not thus contra-indicated; and their effects are more simple, and probably more to be depended upon. The action of antimony on the circulation is more decided, and more certain, than that of ipecacuanha, or of any of the vegetable diaphoretics. This must probably be connected, in

some degree, with its more efficient action as an evacuant; and yet it seems probable, that, independently of its evacuant action, it exerts a primarily depressing effect on the nervous system, or at least on the circulation. The effect of antimony as an evacuant, is, however, very considerable; and the degree to which it acts as an auxiliary to purgatives, especially saline purgatives, adds greatly to its usefulness. Although hardly to be classed as a purgative when given alone, from its much greater tendency to act on the skin, and the consequent uncertainty of its effect on the bowels, when conjoined with purgatives that will prevent its diaphoretic action, and determine its effects to the bowels, it becomes a purgative of great value, and one that acts on many cases of acute gout in a most useful way.

All diaphoretic medicines, even the mildest, may be contra-indicated by considerable gastric irritation,—and their use be not admissible, until, at all events, this has been relieved, or greatly lessened; and then it may be expedient to modify their immediate action on the stomach, and mucous membranes generally, by combining them with sedatives or narcotics; and this combination may at times enable diaphoretics to be given, and their use to be continued, when the uncombined diaphoretics could not be made use of. Of the simple sedatives, hydrocyanic acid is probably the most important, most useful, and most frequently resorted to. The narcotic made use of may, of course, be opium, mor-

phia, henbane, lettuce, or hop, according to the circumstances of the case.

It would be impossible to exaggerate the importance and usefulness of diaphoretics, pushed to the extent of inducing, and keeping up, a sense of nausea, in acute cases of gout; and, when used to a less full extent, in milder cases. It would be impossible to overestimate their value, in diminishing the necessity for exhibiting colchicum, and thus lessening the risk of interfering unduly, and needlessly, with the gouty paroxysm; and it may be believed, that the more they are trusted to, and the less other medicines are used, unless too strongly indicated to be justifiably withheld, the more satisfactory will be the eventual consequence to the patient, the less the probability that gout will rapidly degenerate in character, or an early return of the attack show the incomplete relief afforded to the system by the paroxysm. The severe cases that have been thus relieved, the amount of local and general excitement that has been reduced, the little loss of strength eventually entailed by this mode of treatment, compared with the consequences of giving other evacuants to a similarly efficient extent, are strong reasons for beginning the use of diaphoretics as early, as is compatible with the necessity for securing an efficient purgation in the first instance, and obtaining, as early as may be, a perfectly solvent state of the bowels, and a moderately normal state of the alvine discharges. It does not of course follow, that an occasional and neces-

sary dose of aperient medicine may not be given in connection with diaphoretics ; but only, that active purgation, such as is found so useful in the onset of an acute attack of gout, and such as it is often necessary to keep up, when the digestive organs are deranged, or the liver or bowels are peculiarly sluggish, is not to be persevered with, and made to constitute the treatment that is mainly relied upon,—for which the use of the diaphoretics, as the means of evacuation, &c., will have been substituted.

The treatment of a paroxysm of acute gout must, then, usually be commenced, by exhibiting an active dose of purgative medicine, to which an efficient dose of mercury (calomel, or blue pill), is, in most cases, a warrantable and useful addition. Such a dose may consist of a few grains of calomel or blue pill, and a sufficient quantity of compound extract of colocynth, with or without two or three grains of finely powdered scammony, in addition to that contained in the compound extract of colocynth. This may be early followed by a dose of infusion of senna, with sulphate of magnesia, or tartrate of potassa and soda, or tartrate of potassa, warmed, if need be, by tincture of senna and some aromatic spirit, and moderated in acridity, if necessary, by the addition of manna and alkalies ; or the pills may be followed by a sufficient dose of castor oil ; and usually the purpose of the primary purgation will be found to have been answered by these means, and diaphoretics may be immediately commenced, and pushed to nausea, which may be

kept up for twelve or twenty-four hours, or until the inflammatory and febrile actions have begun to subside, when the diaphoretic medicines may be continued in less active doses, or in doses less frequently repeated. Half an ounce to an ounce of liquor ammoniæ acetatis, with eight or ten grains of sesquicarbonate of soda, and six or eight grains of bicarbonate of potassa, and from fifteen to sixty minims of vinum antimonii tartratis, or the same dose of vinum ipecacuanhæ, repeating the dose every two, four, or six hours, according to circumstances, will be found to be adequate to the relief of many cases; and, at all events, enable medicines of more doubtful eventual benefit to be deferred, until the risk of unduly or prematurely interfering with the paroxysm has become infinitely lessened. The best vehicle for exhibiting the above medicine is usually camphor julep,—lessening, as this usually does, the risk of the dose being rejected, and by no means interfering with the diaphoretic action, but rather ministering to it. Should the medicine, however, not be retained, in the small doses in which it should be commenced in almost all cases, and this be evidently independent of the existence of such decided gastric irritation, as should have been held to contra-indicate the exhibition of the medicine at all, two or three minims of hydrocyanic acid may usually be added to every dose, without doing any harm; or, in some cases, the medicine may even be given in a state of effervescence, by adding a sufficient quantity of carbonated alkali to the dose, and mixing with it, at the

time of taking it, a sufficient quantity of lemon juice, taking care, in most cases, that there shall be an excess of alkali; and, in all such cases, it is desirable, that as much carbonic acid be allowed to escape, as is compatible with the purpose of diminishing the chance of vomiting for which it is ordered,—because, by distending the stomach with its volume, it is otherwise apt to interfere with what is wished, and induce sickness,—or, failing in this, it may induce disturbance of the stomach, and sometimes spasmodic pain at the præcordia, or even cramp. Supposing the use of hydrocyanic acid, or of the aërated form of exhibiting the dose, to be contra-indicated, or not found to answer the purpose, a moderate quantity of hyoscyamus or lettuce may often be added, with marked benefit in this respect.

In more violent cases, when the inflammation and the fever run very high, much benefit will be very often derived from using the tartrate of antimony by itself, and in larger doses. For this purpose, two grains may be dissolved in eight ounces of water, and the patient begin its use by taking one table spoonful, or even less, every hour, or every half hour; and as, by habit, the stomach gets to tolerate the medicine better and better, the dose may be increased to two, three, or four table spoonfuls, its frequency being regulated by circumstances. And, without doubt, it often happens in such cases, that the addition of a very small quantity of tincture of opium, or of the acetate of morphia, much assists the stomach to tolerate the antimony, — which, in

its turn, by promptly determining the opium to the skin, prevents any risk of its influencing the nervous system, or the organs of secretion, as a narcotic. For this purpose, a very small addition of tincture of opium is often sufficient; from half a drachm to a drachm being usually added to the eight ounce mixture; as much as the latter quantity being perhaps seldom required. This mode of treating these cases will be found to be well deserving attention.*

If the inflammatory action, and the febrile state of the system, continue unabated in degree, in despite of the effect of nauseating doses of diaphoretic medicines,—if the specific condition is evidently uninfluenced, and the state of the bowels, liver, kidneys, &c., have been duly attended to, and regulated,—the time will have arrived, in most cases, when colchicum must be had recourse to. But, on the other hand, if the local inflammation and the general fever shall be evidently under the command of the diaphoretic, and kept in check by it, and if they be gradually yielding to its effects, it will seldom be justifiable to give colchicum, more particularly if the nervous system is bearing the attack well, not losing its power, nor being rendered irritable by it, if the general strength is not being unduly or rapidly exhausted, and if the amount of gout to be developed be evidently moderate, or no more than the constitution appears likely to be equal to. Supposing, however, that the use of

* See Dr. Graves' treatment of certain fever cases, as detailed in his volume of admirable Clinical Lectures.

colchicum be now thought necessary, the propriety of combining it with the diaphoretic or the purgative medicines will be kept in mind, the dose being no greater than the case seems imperatively to demand; remembering, that it may be increased if found needful, and to any extent, whereas, administering it unduly, may, by exhausting the general strength, or by rapidly interfering with the local state, do an amount of injury, that may have to be atoned for, by both time and suffering.

In some cases of acute gout, this however being seldom observed in early gout, and seldom, unless the powers of the system have been much shattered, nervous exhaustion and irritation are very early or very considerably manifested, the risk of alarming exhaustion from the local irritation being consequently great, and the necessity for the decided interference of art, urgent and evident. In such cases, opium becomes the all-important medicine, and especially the muriate or acetate of morphia, and, boldly administered, seldom fails to do a large and rapid amount of good. Such cases generally bear opiates well, and require them in efficient doses; and the effect should not be allowed to be followed by a long interval, before the dose is repeated. With the opiates, the use of colchicum may in general very properly be continued, and in most cases is even indispensable; although in some instances, its continued use is contra-indicated,—and in some, the state referred to may be fairly ascribed to a premature or an undue use of colchicum. This

is the great difference between the treatment of early, and of confirmed gout cases,—although perhaps presenting very much the same local characters, and the same amount of constitutional disturbance. The amount of gouty action to be developed, in general increases much, as the disease becomes confirmed, and the attacks are repeated; and this is the case, however judiciously every paroxysm may have been treated, and however carefully the needless or premature exhibition of colchicum or narcotics may have been avoided. Yet it is perhaps not improbable, that much of the increased goutiness of the habit, and the increased amount of gout to be developed and expended in every succeeding attack, is often attributable to the careless and intemperate use of the great soother of gout—colchicum, from the immediate use of which some have not self-control enough to refrain, or of the impolicy of prescribing which too early, some medical men do not seem to be aware, or do not act as if they were so. A man should not only be well informed of the nature and history of gout, and have the entire confidence of his patient; he should not only be honest enough to withhold affording immediate relief, when he feels that it will be to the eventual injury of his patient; but he must be firm almost to obstinacy, imperturbable to sarcasm, invective, or captiousness on the part of the patient, as well as to entreaty the most urgent, or he will, in very many cases, give colchicum too early, or in cases where it should not be given at all.

In general, confirmed gout requires a much longer continued use of active purgatives, than is found to be necessary or advisable in early gout. This must be ascribed to there being a great amount of gouty matter in the system, a greater struggle for its development, and a stronger necessity for such evacuants as exert a great and rapid influence on the system. It must be taken in connection with this, that there is at once more disordered condition, and less real vigour of body,—its apparent power being in a great degree the effect of the stimulus of the morbid condition; and therefore, that, although evacuants may be more necessary, they must be used with additional care, if with greater boldness; and if venesection is usually objectionable in early acute gout, it must be still more so in such cases as these. The amount of purgatives that may, and sometimes must, be ordered, in such cases as these now referred to,—in order to moderate and regulate the development of gout, and prevent it from directly injuring the joints affected, and through them the system in general,—and to prevent the general fever from involving the great organs in morbid action,—would hardly be credited by a man not accustomed to the treatment of the disease, and must often, if the account of a few days treatment be preserved, astonish any one, however much accustomed to gout cases; and this, whether the quantity of purgative medicine ordered, or the amount of evacuation from the bowels produced by it, be taken into

the account. Thus, as the paroxysms pass from what is called early, to what is called confirmed gout, the disease requires a decided modification of treatment: diaphoretics cease to constitute the most important and trustworthy means of treatment, and purgatives become more and more essential, and have to be made use of more and more; and, inasmuch as the powers of the system become at the same time intrinsically less, and the condition of the tissues that have been so often the seats of gouty inflammation becomes more yielding—having less of vital tonicity, the powers of the system must be saved on the one hand, and the affected parts must be protected on the other, from the consequences of the paroxysm; and the earlier exhibition of colchicum, and even of more direct and powerful narcotics, becomes more and more matter of absolute and unavoidable necessity. Independently of the stronger necessity for a free and a continued use of purgatives, as the disease, after repeated paroxysms, becomes more and more the confirmed habit of the constitution,—and of the necessity for exhibiting colchicum and narcotics earlier in the attack, or for less cogent reasons, than would render this justifiable in early gout,—the stomach is apt to become more irritable in advanced, than in early attacks of the disease,—and simple diaphoretics, however cautiously administered, are apt to be tolerated less and less well; and, therefore, the diaphoretic treatment must either be greatly reduced in its degree, and consequently in its power, and in the de-

cided character of its results,—or it must be modified by the combination of such narcotic with the diaphoretic medicines, as will prevent them from acting immediately and disadvantageously on the stomach itself. It will be found, then, that, although early and occasional paroxysms of gout may be treated satisfactorily, without much use of purgatives, advanced and confirmed paroxysms cannot be so treated; that, although early cases may be treated most advantageously, and almost exclusively, by diaphoretic medicines, it is not so with confirmed cases; that, although colchicum may often be altogether dispensed with and avoided, in cases of early gout, even when highly acute in character, and severe in amount, it is seldom that advanced gout can be so deprived of this medicine, without great local mischief, and great constitutional exhaustion; and, that, although opiates, and narcotics of all kinds, are to be jealously shunned in the treatment of early gout, unless specially indicated, they may be given, with comparatively slight indications, in confirmed gout. And thus, in cases of confirmed gout, it becomes rather a question of deferring the use of colchicum, than of doing without it altogether; of making use of the smallest quantity that is found to answer the purpose, aiding its action by such evacuants as may be best borne, and be most efficacious; of lowering the system as little as may be by powerful evacuants, rather than endeavouring to dispense with their use.

As the gout becomes more and more confirmed, and the amount of morbid irritation steadily increases, colchicum and narcotics become more and more necessary to the treatment of the paroxysms,—and the less is the amount of benefit to be derived from evacuants of any description,—and the more cautiously must they be exhibited. Increase of irritation may not be justifiably risked, nor must the remaining powers of the system be materially diminished. There is more of goutiness,—more obvious evil done by narcotics and colchicum,—the gouty matter is increased in amount,—it is more and more repressed,—and its manifestation is more and more prevented; and necessarily so, because neither the powers of the system, nor the condition of the organs of nutrition, will endure the irritation and prostration, that would attend its development. In a large majority of such cases, it will now be found, that the functions of the stomach, and probably of the liver, have become deranged, or are liable to be so from slight causes,—and that a fit of gout cannot be gone through, without inducing or aggravating this condition, and thus augmenting largely the risk that would be encountered, if the gout were allowed to develope itself unchecked, or unmodified. It is a painful necessity attendant on advanced gout, which has proceeded to the degree now referred to, that we are called upon imperatively to administer, for the relief of the immediate exigencies of the case, what we feel will be, in itself, an indirect means of increasing eventu-

ally the great evil itself. Yet, it is of much value, that this view be steadily kept in mind, by both the patient and the medical man; because, it does sometimes happen, that, even in such cases as these, perhaps by slow degrees, and after many disheartening trials, the system may be able to sustain a paroxysm of unchecked gout; and, being thus far and so greatly relieved from the pressure of undeveloped goutiness, and its secondary but important influence on the organs of nutrition, that the comparatively long interval between such a paroxysm and the succeeding fit, with the better condition of the great organs, consequent on the relief from so much gouty influence, enables the vigour of the system to be, in some degree, restored, and a nearer approach to early gout reproduced, than could otherwise ever have been hoped for. To make the chance of trying this experiment be embraced, whenever it presents itself,—to enable it to be fairly and patiently tried, the attempt not being rashly or hastily abandoned, nor given up in despair, on account of one or two failures,—it is evidently necessary, that the sufferer and his medical attendant should be equally impressed with the importance of the object to be struggled for. It may involve little less, than whatever of physical capability makes life valuable.

In many such cases, however, an attempt of this kind is evidently hopeless. The age, or the degree to which the habit is confirmed, or the original delicacy of constitution, or the degree to which the nervous energies have been shaken and expended,

may make it unwise to try this great experiment, ever so cautiously. Very great functional disturbance, or organic change having taken place in some important viscus, may, at least equally, forbid the risking an unmodified development of gouty inflammation; leaving little to be done, or to be hoped for, but to meet symptoms as they arise, by palliative measures,—to keep local irritation in check by means of colchicum,—to soothe the general nervous excitability by narcotics,—and keep up the strength, as far as may be done without adding to the gouty condition, by stimulants and tonics.

The states of system in which acute gout is sometimes found to be developed, the general and extreme feebleness of the habit, the advanced age, the complication of organic mischiefs that may be present at the same time, must occasionally surprise the practitioner himself. The careful management that is then required, the great caution necessary in the use of evacuants, and even perhaps of colchicum, the chief trust being placed in stimulants and narcotics, will be the guiding principles of the management of such cases.

There is much risk, both during and after a paroxysm of gout, and indeed in the general management of the gouty habit, of lowering the system unduly. The effect of this is, in almost all cases, to protract the duration of the fit, and not unfrequently to render it less acute, and so much the more injurious, and to keep up or increase the tendency to a sluggish and irritative condition of

the system and the fibrous tissues, and increase materially the amount and the risks of localised gout. It is a very old and very true observation, that a common exciting cause of gout is the debility consequent upon the decline of other diseases, especially the more important of the phlegmasiæ,—that venesection for other complaints is sometimes evidently followed by gout, the venesection having, to all seeming, induced it. It is matter of notoriety, that a man of gouty habit, accustomed to a certain, and it may be an undue, daily quantity of wine or animal food, cannot have the quantity suddenly or materially lessened, without having the fits more often repeated than they had been previously, or, at least, without having an amount of gouty irritation, if he should escape a paroxysm of the disease, greater than he had been used to under the more stimulating diet. But gout is essentially as much a disease of debility and mal-assimilation, as of plethora; and the aids from stimulants, and a full and nourishing diet, which the system has been accustomed to, cannot be greatly lessened, without adding to the debile condition, and increasing the derangement of the assimilating functions, and by so much increasing the gouty tendencies, however usefully they might seem likely to act on the plethoric habit of body. Any such attempts to relieve an established gouty habit of system, should be made very carefully and cautiously; and, in most such cases, a reform is to be undertaken in an opposite direction; and

instead of interfering with the ingesta, either in quality or amount, the first effort should be to increase the expenditure of the system, by exercise, friction, baths, &c. ; following this up, if found to be eventually desirable, by such gradual lessening of the habitual stimulants or nutriment, as the circumstances of the case may, when cautiously tried, evidently justify.

In discussing the treatment of the paroxysm of acute gout, the variety of the complaint called active gout has been incidentally, and perhaps almost sufficiently, adverted to ; and the principles by which its treatment should be regulated may, for the most part, be gathered from it. The principle, that repetition is better than omission, has been already followed in more than one instance ; and a brief account of what may have been left unsaid, or might be misunderstood, may be permitted here.

Active gout differs from acute gout, in its degree ; and it differs from it, at least in the same proportion, in its treatment. The paroxysm seldom begins suddenly ; the pain or uneasiness, as may be, is seldom first felt in the part that is to become the seat of the inflammation ; the attack is generally preceded by a good deal of constitutional derangement, which is commonly referred to dyspepsia, or biliary derangement, or perhaps rheumatism, or neuralgia ; and, at length, it localises itself, showing itself as gout by its position and character, but being, nevertheless, generally, much less painful

and less characterised by inflammatory symptoms, and producing less active febrile symptoms, than acute gout. The mere question of pain, perhaps, depends more on the part that is affected, than on the degree of gouty inflammation; and the pain is usually, as has been said before, greater in deep-seated gout, or gout involving a large surface, or gout near the trunk of the body, than in gout affecting the more superficial textures, or the smaller joints, or the joints more distant from the trunk. In active gout, the course and development of the paroxysm are slow, and unsatisfactory,—the tendency to metastasis is almost always great,—and there is usually more derangement of the visceral functions, more depression of the nervous system, more morbid sensibility, and more sleepless or greatly disturbed nights, in proportion as there is a greater deviation from the acute development of local gout, and less general fever. This usually follows acute gout, or irregular gout; and is a form of the disease, which not unfrequently appears in a system that is under the influence of some other disordered condition. It is a variety of gout that is practically of great importance; because, although apparently so much less severe, it is really a more formidable complaint than acute gout,—one that is attended with more risk,—which requires more jealous watchfulness and careful management,—which is more liable to sudden and great fluctuations,—which is more apt to become retrocedent, is less tolerant of treatment, and less influenced by it.

It is a form of gout that should be dealt with, as far as may be, by negative treatment. The expectant practice is commonly the best and only rational refuge of the medical attendant. The indications are, to watch, note, and, if necessary, treat, symptoms as they arise; to avoid, as much as may be, any interference with the local inflammation; while, by gentle means, any disordered condition of the viscera is cautiously relieved, and the equilibrium of the circulation maintained; the powers of the system not being essentially or unnecessarily lowered, and the nervous system being, if possible, tranquillised and supported. A careful system of alteratives; mild aperients, when indicated; mild diaphoretics; alkalies, in carefully-watched doses, preferring ammonia, if not contra-indicated; mild narcotics, as the *pilula styracis composita*, or *tinctura camphoræ composita*, or moderate doses of muriate of morphia, or lettuce, or henbane; are the principal points of general treatment usually demanded; it being borne in mind, that, unless specially indicated, the less that is done the better. If *colchicum* is found necessary, on account of great disturbance, or great depression of nervous system, its exhibition must be cautious, and its effects watched; and, of course, the preparation used should be mild, and the dose moderate. If not contra-indicated, stimulants are often worth trying in such cases; and, if found in use, they are not rashly, or without much consideration, to be withheld, or diminished in quantity. In fine, the

maintenance of the general strength, and non-interference with the local condition, are the two main principles to be as little as possible lost sight of in the treatment of active gout; and which should only be departed from, under the pressure of urgent symptoms, and unmistakeable indications.

Disturbance of the urinary secretion is a very common attendant on active gout. It resolves itself into deficient urine, or urine charged with acid salts, or urine of alkaline character. For the first may be recommended a careful trial of diluents, alteratives, and the milder diuretics. Such treatment generally proves sufficient to relieve these cases; especially, perhaps, the *spiritus ætheris nitrosi*: with small doses of blue pill, with the possible addition of a little squill. For the urine charged with lithates, the use of alkalies and mild aperients usually proves sufficient. For the cases of alkaline urine, about which there is always very justifiably more anxiety, gentle tonics and alteratives—as a little grey powder or Plummer's pill occasionally, and either the vegetable bitters, or the preparations of zinc, or of silver, will be indicated. As has been said, such cases, are to be looked upon as of possibly serious aspect; but they are certainly less common than might be supposed; or, if common, the condition is temporary, and therefore of no material importance. This remark, of course, strictly refers to gout cases, and has no reference to the recurrence of this state of urine after special injury, &c.

Of the dietetic treatment of the gouty paroxysm,

it is not needful to say much. The general fever and local inflammation point out, with sufficient clearness, the necessity of the antiphlogistic regimen for the time. As the attack is more acute, and the febrile action greater, the dietetic restrictions must be carried further, both as to the quantity of food allowed, and as to its digestibility; avoiding what may unduly stimulate, or prove unduly nutritious. Cases of active gout are sometimes met with, in which doses of mutton chops are very necessarily prescribed; and cases of acute gout occur, in which anything more than weak tea, or toast and water, is evidently injurious. Usually, even in very decidedly acute cases, a small quantity of dry toast, plain dry biscuit, plainly boiled rice, barley water, or well-boiled groat-gruel, in moderate quantities, may be allowed. In some cases, the stomach will not tolerate nor digest much liquid food; and, although apparently contra-indicated, it becomes necessary to allow more solid, and therefore more nourishing, food to be taken. As a step beyond the articles of diet particularised above, jelly in its various forms, of course without wine, flavoured with lemon peel, or some similar simple aromatic,—or simple gelatinous matter, as calves' feet,—may be usefully remembered. Equal parts of arrow-root, or gruel, and weak beef-tea,—or boiled rice, with a small quantity of simple gravy,—or macaroni well cooked, and eaten with a little salt, or with the addition of a little plain gravy,—or bread-pudding made quite simply,—or strong beef-tea, or mutton-tea,—are so many steps

towards a more nourishing diet,—directly fibrinous alimentary matters being, in most cases, desirably avoided during the paroxysm, or until its decided declination. And yet, in connection with this, the habit of body, and what we know of the nature of gout, must not be lost sight of. The system must not be allowed to sink greatly or needlessly below par,—lest, in this way, the progress of the fit should be interfered with, or its sequelæ prove troublesome and lingering, from deficient power to secure and effect their sufficiently speedy absorption. That amount of low diet, which might be prudent and necessary under common circumstances, involving the same amount of local and general excitement, would seldom be justifiable in gout cases; and the return to the accustomed habits of eating and drinking should be permitted, as soon as it can be allowed with strict attention to avoiding the risk of aggravating or reproducing the paroxysm. Therefore, an extremely low diet is only applicable to acute paroxysms; and in such cases, it should be departed from and amended as soon as prudence will admit of it.

The recumbent posture should, if possible, be rigidly maintained during the paroxysm; diminishing as this and the consequent muscular repose do, the risk of troublesome local consequences; while it is a means of lessening the intensity, and probably of shortening the duration, of the paroxysm. This is apt to be neglected. And the observation leads to another, which may be made in this

place,—that an early attempt to move or use the part that has suffered from the attack, is always unwise. This is done usually, as far as we have been able to gather, from an opinion that the deposition is softer, and more readily absorbed, immediately after an attack has declined; and that the chance of quick and complete absorption is increased by the early use of the part. There may be some truth in the premises, but the conclusion is fallacious. The risk of keeping up more or less of gouty irritation in the so recently inflamed part, or of reproducing it, is a greater evil, than any possible advantage to be obtained by using it; and the same amount of good, without any risk, may probably be secured, by gradually-commenced, and steadily-persevered with, friction of the surface of the parts affected,—aiding this, of course, by using the parts, when the inflammation, or remaining morbid sensitiveness, has undoubtedly disappeared. One strong objection, which is often urged against the recumbent position in attacks of gout, is the weakening effect of lying in bed for so long a time,—and this is quite true; but the recumbent position does not involve confinement to bed, or even to the bed-room, unless when the disease is in a highly acute form, or during the first two or three days of the attack; and the patient may very readily and properly be lifted out of bed, and placed on a couch in an adjoining room, with marked relief to his feelings and his symptoms. Confinement to bed not only debilitates very greatly, but is apt to increase, or even produce,

the morbid sensitiveness, so often mistaken for the effects of disease, and perhaps sometimes mismanaged accordingly. The air of the bed-room must be rendered temperate, if need be, by a sufficient fire; but ventilation must be adequately attended to, and is at least as necessary in this, as in other diseases. The great effect of gout on the nervous system, and the powers of the system generally,—the essentially feeble habit in which it commonly occurs,—and the necessity there is for a certain, and probably considerable, amount of power, to secure the satisfactory progress of the attack, and the satisfactory absorption of its sequelæ,—are so many cogent reasons for giving every facility to the decarbonisation of the blood, by the free admission of air to the apartment. A bed-room with the windows facing the south, is generally to be preferred. Sunshine affects more than the spirits; it influences, although its mode of action is mysterious, the body as well as the mind; and perhaps acts on the latter solely, or chiefly, in consequence of its action on the bodily functions.

The local treatment of the gouty paroxysm is of very second-rate importance, and involves very few considerations. Nothing that is calculated to repress or check the local inflammation, should, under common circumstances, be applied. Even the accidental contact of the part affected with the cold air, has repressed the fit of gout. So much protection must be afforded to the part, as will obviate this risk; and accordingly a few folds of cotton, or silk, or flannel, are always wisely and pro-

perly put round the part affected. In what may be called surface gout,—that is, when the inflammation is fully characterised externally, by redness, heat, and swelling,—there is a risk of carrying this wrapping-up system too far. Much needless torture, and much local irritation, and probably much relaxation of the affected parts, are believed to be often produced, by wrapping up, in a large quantity of coverings, the parts affected with this most desirable of the forms of gout. In general, the more evidently superficial the character of the inflammation, and the more strongly it is evidenced, the more may the local coverings be dispensed with; and often a large silk stocking, or a silk handkerchief loosely tied round it, prove to be quite sufficient to obviate the risk of sudden chill, which, even in such cases as these, must not be lost sight of, nor needlessly encountered. The less that the local inflammation is characterised by heat, redness, and swelling, the better will the part bear to be surrounded with thick coverings, and the more needful, and perhaps directly useful, will they prove. In such cases, flannel, or even cotton-wool, is commonly well borne, and seems to be useful; and in extreme cases of this kind, patients are often found to express themselves as deriving relief from having the part surrounded with cotton-wool, and this completely covered with oiled silk. It must, however, be borne in mind, that this latter becomes almost equivalent to a local vapour bath; and that it is apt to interfere with the gouty action,

and to relax the local tissues; and that, on both these accounts, it should not be allowed, unless under special circumstances, such as a large amount of deep-seated gouty action, accompanied by great pain,—in which cases, it must be confessed, that we are often thankful for any means, however otherwise objectionable, that will give even slight or temporary relief to the patient. In such cases, fomentations of simple warm water, or of this mixed with anodynes, or even with strong narcotics, are sometimes needful, and evidently do more good than they can do harm. The more that the local condition seems to be one of morbid sensibility, than of absolutely gouty inflammation—perhaps a point to be determined rather by constitutional than by local symptoms—the more boldly and confidently may narcotic and warm applications be made use of to the affected part.

These cases must be carefully distinguished from others, which they sometimes pretty closely resemble: cases of synovial inflammation of ordinary character, that are mixed with some degree of gouty action, and influenced by the gouty constitution, or, perhaps, set up by gouty irritation, but which might rapidly lead to disorganisation of the tissues. These are troublesome cases, and sometimes are not easily distinguished. When the question is even doubtful, it is always safer and better to act on the supposition, that it may be a case of inflammation, threatening organic change of the part affected, and to treat it accordingly, and precisely as if gout were not

mixed up with it in any way. Such cases must be treated promptly and energetically,—by leeches and counter-irritation locally,—and constitutionally, by mercury, &c.,—as would be done under ordinary circumstances. It is not often that, under other circumstances, local blood-letting is justifiable in the gouty paroxysm; yet it sometimes is so; the local action, although evidently gouty, sometimes proving excessive, and not manageable by general treatment; and then leeches, &c., may be advisable. Leeches should hardly ever be applied immediately over the part affected with gout, but somewhat nearer to the trunk of the body. If applied to the part itself, they are apt to prove irritating; and in some instances to increase, instead of diminish, the disturbance.

It is, perhaps, only necessary to add, that local treatment, except under such circumstances as those mentioned, cannot be too simple, or too negative in character; adequate protection from inequalities of temperature being all, that, in a large majority of cases, is either indicated or justifiable. As to cold applications to the part affected with gouty inflammation, no language can be too strong to deprecate their use. We have never yet seen a case of gout, in which they were justifiable,—nor ever met with a case in which they had been used, where there was not sufficient to warrant the belief that they had done harm; and the single duty is to dismiss them with the most positive interdiction against their use. All evaporating lotions, whether spirituous or otherwise, and whether tepid at the

time of application or not, if allowed to act as evaporating lotions, are no less objectionable, and no less to be avoided. If surrounded with impervious materials, or so many and such thick coverings as to prevent evaporation, they are of course no longer evaporating lotions, but are virtual fomentations, and the use of these has been sufficiently taken notice of.

An important, and sometimes neglected matter in gout cases,—and especially important in such as are evidently resulting in considerable local deposit—is, to put the part into the best possible position for future use, in the event of the deposit seriously or entirely interfering with the movement of the joint; thus, a bent finger must always be more irksome and troublesome, and interfere more with the uses of the hand, than a straight one; the foot at a right angle with the leg is more likely to be useful in progression, even if fixed, than one in which the heel is drawn up; and a straight knee, and a bent elbow, would generally be preferred, if the movement of those joints were to be impaired, or wholly lost.

The sequelæ of a fit of gout always demand more or less of attentive treatment. The more severe the paroxysm may have been,—the greater the number, or the more extensive and important the tissues affected,—the more insidious and gradual the approach of the fit, and the more protracted its duration,—the greater the amount of gouty condition thrown off,—and the greater the degree of

constitutional debility induced,—the more important and necessary will such attention be. And first, as regards constitutional measures, much care will be necessary in restoring the strength of the patient. It has been sufficiently urged, that the powers of the system must not be needlessly reduced by treatment, or low diet, during the paroxysm; and it is quite as important, that the opposite error should not be committed during the convalescence. A diet that is moderate in quantity, and in amount of relative nutritiousness, should be strictly enforced during the sequelæ of the fit, and be very gradually amended for some time after it has wholly disappeared. It must be remembered, that tissues recently affected with morbid action are left in a state of atony and relaxation, and would be very easily influenced and irritated by excess in the volume, the momentum, or the nutrimentary constituents of the blood; any, or all of which, can only be obviated, by a rigid, and somewhat abstemious diet, during the convalescence from the disordered state. To aid the effect of a careful diet, the use of stimulants should be restricted,—modifying such restriction according to the previous habits of the patient, and according to the various circumstances of the case; the return to the ordinary allowance of stimulus being gradually accomplished, and the stimulant being given in the least nutritious, and simplest form; very light wines, if free from decided acidity, or weak brandy-and-water, being preferred to the heavier and stronger wines;

the quantity allowed being no more than sufficient to aid in gradually restoring the patient's strength ; and the stimulant being in some cases altogether withheld, when the patient's strength evidently improves without its assistance. On the same principle, in most cases, the resumed use, or the degree to which the use should be allowed, of those alimentary matters which contain a large proportion of nitrogen or of carbon in a given bulk, as flesh-meat, or sugar, or fatty matters of all kinds, including butter and oils, should be gradually brought about ; their effect on the system in general, and on the parts so recently affected, being jealously watched. There is a double risk in these cases : a risk of reproducing the paroxysm, and a risk of keeping up gouty action in a system, that, it is probable, is, by no degree, or rapidity, or regularity of paroxysm, left free from gouty irritation ; the probability being, that the remaining gouty condition is gradually expended in the various general and local secretions,—or that it remains masked, and lingers in the system, to be the commencement of a preparation for a future fit, or the cause of irregular and smouldering gout. The less regular the attack, the less acute the attack, the greater the number of parts affected by it, the less sudden its development, the more slow its decline, and the more lingering the local and general convalescence, the greater will be the probable remaining goutiness, and the more important the cautions about the diet and general management of the convalescence.

In connection with the general management, change of air and scene is always among the best, most certain, and safe of the restoratives,—and one that, when practicable, should always be enforced; care being taken, of course, that it is not done prematurely, lest the parts recently affected should be unduly stimulated by the mechanical disturbance involved in even the most luxurious modes of travelling,—or the system be excited unduly, or before it is able to bear the stimulus which change of air always gives to it. Change of air alone is often found to reproduce gout, in parts and systems very recently affected with it; and although the best of restoratives, this, its stimulating effect, must be borne in mind, to make it be judiciously and safely prescribed. Until the pulse has lost its irritable character, contra-distinguishing this from mere quickness, which may depend on debility,—and so long as the great organs are not adequately relieved from congestive condition, - change of air can seldom be advisably ordered. The stimulating effects of change of air are universally admitted, and may be physiologically and pathologically illustrated. The effect on the appetite and the digestion of the man in health, the deep, or much interrupted and disturbed sleep—either of which is the common result of the unwise or undue use of stimulants, the sluggishness of the bowels—the consequence of congestion, which is, in its turn, the result of stimulation, are so many instances of the effects of this change on the healthy system, or at least on a system that is

not positively out of health. These effects are believed to be quite independent of the effect of change of air on the mind itself, and through it on the body. In fact, the mind is probably as much influenced by the physical condition, as this is by the mind. The greater number of perceptions and thoughts induced by fresh scenes and faces, and coming into contact with fresh minds, must necessarily excite the mind, and expend nervous power ; but change of air produces the physical effects spoken of, under circumstances in which these could not operate ; and those effects are not by any means proportioned to them ; whereas, the aptness of the mind to receive impressions, and their effect upon it, is very uniformly dependent on the bodily condition.

The warm bath is an important means of influencing the sequelæ of the gouty paroxysm, and expediting their removal. The temperature should be such as would neither heat, nor relax, nor communicate any shock to the system ; and the time of staying in the bath should be no longer than enough to influence the system slightly. Used at the temperature of 95 degrees of Fahrenheit, every other day, in the forenoon, about three hours after breakfast, for two or three minutes at a time, the warm bath proves soothing, and slightly stimulating ; and it does not relax, and is of undoubtedly great use, in enabling the system to free itself from the sequelæ of the gouty paroxysm,

To further the same end, the abdominal organs

must be kept in a solvent state, the amount and character of their secretions being duly regulated ; it being remembered, that a congestive state, with morbid secretions and costive bowels, is apt to be among the sequelæ of a fit of gout, and to aggravate the other consequences of the fit, if not to reproduce it. For this purpose, mild aperients should be made use of at stated intervals, whether apparently indicated or not ; and indications for their exhibition should, of course, be carefully attended to. But there is strong need for caution in the selection, dose, and mode of exhibiting aperients, under these circumstances. It must be borne in mind, that an active purgative might do harm in two ways,—by direct irritation, risking the reproduction of the paroxysm,—or by exhaustion of the system, robbing it of some of the power necessary for its speedy convalescence. The fit is occasionally brought back by an irritating purgative, and such should be most carefully avoided. Mild saline aperients ; or rhubarb in various forms, as with alkalies, or with senna, or with sulphate of potassa, or in the excellent form of the compound rhubarb pill ; or the compound decoction of aloes, (the old Beaume de Vie), when the amount of stimulant it contains is not objectionable, either alone, or in combination with magnesia or senna ; or, perhaps, better than all the rest, when not found to disagree with the stomach, or to be strongly objected to by the patient, small or moderate doses of castor oil ; and, in addition to these, a few grains of blue pill when

indicated, are what usually prove to be sufficient; and these are to be qualified in their action by aromatics, or the milder narcotics, as required. Severe cases usually stand in need of the more direct means of restoring the strength. Of the simple stimulants, carbonate of ammonia is by far the best,—camphor julep being generally the best vehicle for it; of the tonics, one of the mineral acids, or a light vegetable bitter, as infusion of calumba, or compound infusion of gentian, with compound infusion of orange-peel, or infusion of cloves; or, as a slight tonic and emulgent, infusion of rhubarb, with any of the bitters, aromatics, or alkalies; or a domestic infusion of the roots and leaves of dandelion, with or without chamomile flowers; usually answer every purpose; although, in the worst cases, sulphate of quinine, some one of the preparations of iron, or other still more direct and decided tonic, are, or may be, indicated, and prove more useful.

Of the local means of aiding the system to free itself from the sequelæ of the paroxysm, rest of the part affected, and frictions, both already spoken of, are the most important; the action of the one being negative,—that of the other being most influential, in restoring the part to strength, and promoting the absorption of the deposit. Friction may usually be begun gently, before the paroxysm has entirely declined; the time during which it may be used, and the hardness of the rubbing, being gradually increased, according to circumstances. It might be well, if those liable to gout were never to omit

the daily use of friction to the joints of the extremities, unless during the acute or active stage of a gouty paroxysm: the habit could not do harm, and would probably be a direct means of giving vigour and equalisation to the capillary circulation of the parts, and lessening the tendency to the disease.

Very little can be said in favour of the various lotions, that have been, from time to time, brought forward, for aiding the parts, that have been affected with gouty inflammation, to relieve themselves from the deposit. The steady use of tepid water to the parts, once a day; substituting for this, when there can be no longer any risk from so doing, the sponging of the joints with cold water, or cold salt and water, before the friction is used, are often of evident and great benefit to the parts. These, however, may be contra-indicated, or be unwise, in advanced gouty subjects. Mercurial and iodine applications have their respective advocates. The former is not by any means so useful as a local application for the sequelæ of gouty, as it is for the sequelæ of common, inflammation. The local use of iodine is of more service in cases of chronic gout, than in those where it is a question of its value on the sequelæ of acute or active gouty inflammation. In the latter cases, we have rarely been able to ascribe any good effects to it. Alkaline lotions have been warmly advocated, but this has been from speculative notions of the nature of gout; and it is probable that they are seldom of much, if of any, real use.

The treatment of irregular and chronic gout

resolves itself into the primary one of altering, if possible, the character of the complaint, and raising it into a more marked, localised, and inflammatory type of the disease, having a defined course, and definite results, leading to the relief of the system from a perhaps long-existing, and otherwise in all probability perpetual, evil, for which little can be done but palliative measures. This has long been known to be the case, and many means of influencing these kinds of gout, and rendering them more active, have been put forward. Local means, so long valued highly, are, in truth, seldom of any use. The mustard and hot water pediluvium, sinapisms, the various local irritants, made use of to produce the localisation and development of the paroxysm, very rarely succeed, in ever so slight a degree; and this for the obvious reason, that the cause of the inadequate or irregular manifestation of the disease is constitutional, and can only be remedied by constitutional treatment. These cases—although sometimes, under the influence of strong hereditary influence, met with in persons who have never had a decided and well-marked fit of gout; and although not seldom met with, in a very much modified form, in cases predisposed to gout, but in whom, from various circumstances (sex, habit of life, &c.), its manifestation has been retarded or interfered with, and in whom a marked fit of gout has never been developed—are seldom seen in a decided form, except as a consequence of severe and repeated attacks of gout, in a system predisposed strongly to the disease. It

sometimes is evidently traceable to neglect or mismanagement of the paroxysm. Chronic gout is a most troublesome disease. In many cases of advanced gout, it follows and connects together the paroxysms of the disease. It is essentially a sign of constitutional debility, yet is no less certainly of slow inflammatory character. It is usually made worse by whatever materially adds to, or diminishes, the powers of the system. The essentially debile condition upon which it is grafted, will necessarily lead to the use of every means to keep up or increase the patient's strength; whereas, the nature of the ailment, its connection with plethora, and its inflammatory character, will cause the means resorted to for this purpose to be as little stimulating or loading to the system as possible, and as little liable as may be, to derange the digestive organs, or the nervous or vascular system. An adherence to food that is easy of digestion, and little likely to increase the plethora, and sufficiently nutritious to keep up the powers of the system; great care in the use of stimulants of all kinds, shunning those more particularly which are apt to disagree with the stomach, or to load the system, as well as act as stimulants,—as malt liquor, or the stronger and heavier wines, unless their use has, from long habit, become one of the necessities of existence, and an attempt to leave them off has been proved to be unwise; a frequent, and judiciously-timed and regulated, change of air; the use of tepid baths, especially of the naturally thermal

waters ; a careful use of light, alterative, slightly tonic, and gently aperient medicines ; are what the practitioner will have to trust to chiefly, or entirely, for the relief of his patient thus circumstanced. As an auxiliary to these means, we have no longer any doubt, that iodine, in decidedly small and carefully-watched doses, is essentially useful. The dose must be such, as will not sensibly lower, nor sensibly stimulate ; which will not interfere in any way with the patient's feelings, nor in any very perceptible degree with his functions ; but such, as may be continued for weeks, without any appreciable effects. Given in such doses, when not contra-indicated, iodine will often be found useful in cases of chronic gout, and of masked goutiness ; and it is well worthy of trial. Iodide of potassium is its safest form ; and one, two, or three grains of this may be given, once or twice a day, in infusion of dandelion, or of buchu, or of hop, or in water, or soda-water, or any other indicated vehicle.

The external or internal use of iodine in the different forms of gout, during the absence of acute or active inflammation, is a question of rising interest. That it does not debilitate the system, or at least, when carefully given, does not debilitate it to the degree that was at one time feared or conceived, is now generally admitted. On the contrary, many persons evidently become strong, and rapidly gain flesh and power under its use. That it has great alterative powers, is now admitted on all hands ; that it acts almost specifically on the glandular

system, and the emulging organs generally, might lead to an inference, as to its possible usefulness in gout; and there can be little question, that, in many chronic, and no small proportion of irregular, gout cases,—and in many cases of confirmed gout, when carefully used between the paroxysms,—its effect is most useful; the more so, of course, other things being equal, the more cachectic the general habit, or the more that a scrofulous condition seems to be mixed up with gout. In these, and indeed in all cases, too much cannot be said about exhibiting iodine in mild enough form, and small enough doses; preferring the iodide of potassium until it is found, on trial, to be insufficient,—or should the medicine seem to be indicated, and the irritable state of the mucous membrane evidently oppose its exhibition, or prevent its continuance, exhibiting it by inunction, in the form of compound iodine ointment, more or less diluted according to circumstances. It is believed, that a new era of gout-treatment will mainly consist, in the greater trust in mercurials, and diaphoretics, for the relief of the inflammatory condition,—the much diminished use of colchicum,—and the greater and greater use of alterative means, and, perhaps, chiefly of iodine, to correct the habit of system on which gout mainly depends, or by which it is always much aggravated in its degree, and lowered in its character, and seriously exacerbated in its consequences.

With chronic gout, irregular gout is usually more or less combined; although irregular is not, by any

means, necessarily attended in its turn by chronic gout.

Chronic gout may be more or less paroxysmal in its character; the paroxysms passing into the active, or even the acute form, according to the differing circumstances of the case. In some instances, chronic gout loses altogether the paroxysmal character, or does not so manifest itself for long intervals of time,—the disease being nevertheless undeniably and constantly present, interfering with the functions, and gradually producing deposition in the affected parts, and ultimately perhaps more or less of disorganisation of the structures involved in the morbid action. Or, without ever appearing in what would, perhaps, be strictly called the active form of the disease, chronic gout may become at intervals so far temporarily aggravated,—the amount of use being diminished, and the sensibility of the part increased, and perhaps increased vascular action being sufficiently evidenced, for a time,—as to justify the considering the phenomena to constitute a paroxysm of chronic gout. Yet the characteristics of chronic gout are its long duration, and its manifesting few symptoms, except increasing disability to use the affected part, some irritability and derangement of system, and consequent variableness in the general health. The disease may pass into what we call complicated gout, as acute or active gout may do; and it is probably more apt to do so, than either of those forms of the disease; or, unless occasionally, the general health may be little inter-

ferred with,—the functions being performed regularly without assistance, or with no further help than the sedentary or the little active life, usually involved in this form of gout, might account for,—digestion going on regularly, and with few interruptions or marks of derangement,—the system often becoming loaded with fat, from the deficient expenditure.

The so called chalky deposition, believed to be so much more commonly the consequence of this, than of either of the more decidedly paroxysmal and inflammatory forms of gout, is, at all events beyond a certain point, little amenable to treatment. It may not be in the power of the vessels to re-absorb it; and it may remain in the tissues for years, or half a lifetime, doing no further harm than by interfering mechanically with the motion of the parts in which it is deposited. Perhaps by the mechanical distention of the tissue, caused by the addition of more and more deposit—there being, of course, a point beyond which a tissue cannot be distended by deposit, without irritation—or, perhaps, by some accidental injury to the part, inflammation of the tissue is established, which involves the adjoining tissues; an ulcerative process is set up; a virtual abscess is the result; to which a peculiar character is given by the chalky concretion, and the habit of the system. In some cases, this has terminated in gangrene, or in important synovial disease; but in general, it finds its way to the surface, and must either be discharged through a small and carefully made opening,—or, what is in

most cases much better, may be permitted to find an exit for itself, by ulceration of the skin. It should be borne in mind, that the negative treatment is always to be preferred, when positive interference is not indicated. The morbid, even if not apparently disordered, character of the general habit, that must always attend this form of gout, the debile condition of the system, and its morbid sensibility, make the supervention of erysipelatous, and, as a possible pendant to this, of gangrenous action, to be of occasional occurrence, under any circumstances ; and, when not absolutely indicated, surgical interference is more likely to increase than to diminish this tendency. Great tension must, of course, be relieved, or any such indication for assistance be attended to ; but when the case can be left to the slow influence of the natural effort, it will, in most instances, be wise to do so. Of the other local means, such as the application of leeches to the neighbourhood of the affected part, when the irritative state becomes great, the use of warm applications, or anodyne fomentations, &c., common principles alone can be correct guides, provided only that the broad rule, of not interfering needlessly with the local condition, be rigidly adhered to.

It is hardly needful to point out the general impropriety of applying local irritants, or counter-irritants, in such cases as these. It may be said, in speaking of the general treatment, that mercury, if used as a purgative, is apt to do harm by exhausting

the system further,—and, if used with a view to its ptyalising the system ever so slightly, is rarely of any benefit to the part affected, and is almost always injurious to the constitution. These cases should not be confounded with other affections of the joints, for many of which mercury does so much. They depend on different causes and conditions, and are not necessarily amenable to the same treatment.

As has been said, the great risk in such cases is erysipelas, and that this may pass into gangrene—a further indication of the general malaise of the habit, and its tendency to take on morbid action, of malignant character. But local treatment can influence this tendency very little, or only when tension, or some such indication, points out the necessity for local and surgical interference. The one great means of obviating or lessening the risk is to attend to, and improve as far as possible, the general health. Change of air, in such cases as these, should always be insisted upon, and urged as being of the first necessity. The change should be from a cold to a warmer and less variable climate, if in the colder six months of the year; and at any time, might be advisably from town to country, from valleys to hills, from clay to sandstone or limestone districts. The question of diet should be carefully regulated. The food should be nourishing, but not loading, nor stimulating. The propriety of giving colchicum in such cases must be made dependent on the general state of the system, and considered with reference to the local condition. There are, how-

ever, cases of this kind, in which, what, under other circumstances, might have been thought a more desirable form of gout, must not be risked ; in which the system may be justly thought to be unequal to meet the expenditure of a fit of gout, or the irritation and general febrile action occasioned by it ; or in which the risk of further irritating the part, or parts, involved in the morbid action caused by the deposits, would be unwise, or perhaps unsafe. Under such circumstances, it is obviously better to hazard the probably remote risk of unduly repressing gout, than the perhaps immediate risk of general exhaustion, or great derangement, or additional local mischief. Supposing it to be indicated by a degree of gouty action not otherwise repressible, colchicum must be given ; although, of course, prudently, as to preparation, and as to dose ; and with the same view, the decided narcotics will often be sufficiently indicated, and their use prove sufficiently beneficial, to lead to their being continued for a considerable time. These are cases, which show the impropriety of laying down laws for the treatment of a disease, that are to be applied to all its forms. A large number of the cases of chronic gout cannot be treated justifiably, that is, as advantageously as possible, without colchicum ; and many of these cases require, almost as evidently and necessarily, the more or less frequent use of the decided narcotics. There is no end to the necessity of resorting to colchicum, again and again, during the life-time of gout-patients, that is entailed on

them by the often unnecessary use of colchicum in early gout ; and it is then, and then only, that the experiment of doing without it altogether, can be fairly tried. It may be, that a system may never afterwards be in a fit state for the prudent trial of such an experiment. In later gout cases, and in many of the more chronic cases, especially in such as are mere sequences of acute and active gout, colchicum often becomes essential to the peace and comfort of the life, to the avoidance of frightful local disorganisation, to the saving of the powers of the system, and sometimes to the continuance of life itself, by warding off, or enabling the system to struggle single-handed with, other and urgent diseases. As a general rule, morphia is the only narcotic that can be trusted to in such cases as these, when a narcotic is specially indicated ; and the acetic extract of colchicum does all that is required from the use of colchicum, without immediate risk, or uncertainty of effect, if properly exhibited both as to dose and combination.

Irregular gout is often a doubtful, and it may be a puzzling, form of the disease. Its diagnosis is occasionally difficult, and sometimes not to be determined until after long and patient observation. Assuming the form of various affections of the nerves or the muscles, there is hardly a part, from the scalp to the toes, that may not be affected by it. Knowing no definite course, confined to no particular localities, presented in very different degrees of intensity, from acute, to active, or even to

chronic, it may be fairly said to be seen in forms that are numberless. It may be, that there is a loss of taste or of smell,—or that there is inflammation of the eyes,—or that there is palpitation and other evidence of derangement of the heart's action,—or that there is dyspnœa, perhaps paroxysmal, simulating spasmodic asthma, or more permanent, with or without cough and expectoration, or difficulty of lying on one particular side,—or there may be dyspepsia, often with tenderness over the region of the stomach, loss of appetite, much deranged gastric secretions, and occasional sickness,—or there may be hepatic derangement, often of severe and important character,—or there may be mental despondence, almost amounting to melancholia,—or there may be neuralgia, of severe and obstinate character, affecting the nerves of the head, or face, or limbs, for which neither time nor treatment have appeared to be of any use; and these, apparently very different, cases, have yielded, instantly and entirely, to a paroxysm of regular gout. It seems at least probable, that such cases have been instances of gout, occurring in tissues, where the specific action could not be adequately manifested and expended. Practical purposes are, at all events, better served by taking this view of such cases; and, in a large majority of them, they are caused by the prevention or the suppression of regular gout, or by so much general debility, or by so much derangement of the organs, or by such a condition of the nervous system, as has interfered

with the manifestation of the disease in its regular form. This is not so frequently a sequence of confirmed gout, as chronic gout is. On the contrary, it is very often the first form in which gout is manifested in the young, who have strong hereditary predisposition to gout, and feeble powers,—and in the older, whose habits have been such as to expend the powers unduly, and keep the system below par; these latter having had, perhaps, only one, or in some cases not even one, attack of regular gout. However, in many cases, irregular gout may be clearly traced to the suppression of a fit of gout by a debauch, or by exposure to cold, or by the rash and injudicious use of purgatives or of narcotics. The sudden suppression of a paroxysm, in its earliest stage, and in a feeble system, is sometimes very easily effected. A sudden or great chill, from wet feet, or exposure to cold air, or exhaustion from long fasting, or great fatigue of mind or body, have appeared to be the only means of accounting for it in some cases,—and are, no doubt, under such circumstances, adequate to produce a result, that is never without risk, and always undesirable. It cannot be too fully felt, that, when the system has collected its materials for a fit of regular gout, the sooner those materials are devoted to the purpose, and the more fully they are expended upon it, the better will it be for the patient, both as to the time during which he will have to suffer, as to the amount of his suffering, and as to the effect upon his constitution, and the risk of dangerous consequences. There can be

no doubt, that cases of irregular gout are being every day mistaken for other diseases, and treated accordingly; and there can be as little doubt, that these cases often end in serious organic disease, when not relieved by the occurrence of regular gout.

The diagnosis of such cases as these is often highly important, involving the all-important questions of treatment and prognosis. Gouty affections of the larger joints are not to be treated in the same way, nor to have the same prognosis appended to them, as other articular disease, whether strumous or otherwise; the other forms of neuralgia usually require the treatment which would be proper in gouty neuralgia, to be largely modified; in fact, there is hardly a form of irregular gout, however closely it may simulate other diseases, unless it have virtually degenerated into those diseases, in which a true diagnosis is not matter of importance, on simple and practical grounds. But it must be borne in mind, that there can be no doubt that gouty irritation, long continued, or severe in degree, may superinduce other, less complicated, and more immediately threatening forms of disease in the parts affected; and this makes the diagnosis of advanced cases of this kind difficult and sometimes impossible, and renders their prognosis much more uncertain than it otherwise would be. A thorough knowledge of the symptoms attendant upon organic changes of the different tissues can alone afford just grounds for diagnosis in such cases as these; and to enter into

their consideration would be little else, than to discuss, generally, the practice of medicine.

The history of the case, and a knowledge of the presence or absence of the predisposing causes of gout, are sometimes the only means of diagnosing early cases; in others, we may be aided by some of the symptoms of general gouty irritation. They are cases for which an acquaintance with the many and various symptoms and modifications of gouty action, is especially important; and it is only by a careful comparison of the symptoms and history of the case, with the various phenomena and symptoms of gout, and with those of the various diseases which irregular gout simulates, that a just diagnosis can be formed, where any serious difficulty is presented. By watching such cases, in this way,—tracing out carefully their history and symptoms, and comparing the phenomena of the disease simulated with the phenomena of gout,—it is believed, that, when the local condition has not actually degenerated into other disease, the real nature of the case, if it be one of irregular gout, will seldom be long or eventually mistaken. The real difficulty is met with, where organic change, of character not strictly gouty, is engrafted upon irregular gout, and is as yet not marked enough in character, or too little active in degree, to have become developed and displayed by distinctive symptoms and phenomena. The question may be only determinable by time; and the treatment must be regulated by the symptoms and the probabilities

of the case; the diagnosis being deferred, and the prognosis admitted to be doubtful.

The treatment of irregular gout involves the following principal considerations: 1st, to restore the power which is invariably deficient, to give tone to the nervous and vascular systems, to equalise the circulation, and especially to stimulate and invigorate the vessels of the skin; 2nd, to relieve any marked disordered action, especially that which is so common, derangement of the hepatic functions, and torpor of the bowels, with consequent disposition to fæculent accumulation; 3rd, to promote, as far as possible, the supervention of regular gout—gout of localised and determinate character and course.

To effect the first of these indications, frictions of the surface, steadily practised, and regarded as of first-rate, and not secondary, importance; sponging the whole surface of the body, with cold, tepid, or warm water,—salt or nitro-muriatic acid being, or not being, added to the water, the latter of course in small proportion; the shower or tepid bath every other day; change of air,—a dry, pure, bracing air being selected, if not otherwise contra-indicated; and the careful use of tonics and gentle alteratives; are probably the most important means that we have. As the disordered condition is decidedly acute or decidedly chronic in its character, the latter being much more ordinarily the case in irregular gout than the former, will these means be less or more admissible, and must they be modified, or

deferred, or fully carried out. Thus, even friction may be too exciting; sponging with tepid water may be too direct an interference with acute derangement; and tonics may necessarily have to be deferred; and diffusible and very light stimulants be inadmissible; and change of air be too directly exciting. Or, on the other hand, the shock of the cold shower bath may not be contra-indicated, and may be useful; vigorous friction, and even active gymnastic exercises, be well borne, and prove of use; rapid travelling, with its alternate fatigues and excitements, be directly and immediately serviceable; and the strongest stimulants and tonics be boldly resorted to.

Of the simple tonics, the mineral acids,—and certain preparations of iron, particularly perhaps the much abused sesquioxide, to which the more recently introduced citrate of iron deserves to be added,—sulphate of quinine,—and arsenic in the form of the old liquor arsenicalis,—are those most to be relied upon, and which will, in most cases, be found to do all that can be looked for from this class of medicines. Of these, perhaps, the liquor arsenicalis is more frequently found to answer the purpose than any of the others; and the more so, the more of paroxysmal character the case may present,—and irregular gout is very often strongly marked by paroxysms and remissions. Unless evidently mixed up with dyspeptic symptoms, the vegetable bitters have never appeared to do much good in these cases; and then the good effects have seemed to be

confined to, or to have been in consequence of, the effect upon the digestive organs.

To fulfil the second indications, purgatives and alteratives are the principal means; to which, in acute cases, diaphoretics may very properly be added, and sometimes narcotics and colchicum.

Mercury must be used with much care and judgment; and probably it should be seldom given otherwise than as an occasional addition to the aperient medicine,—and then in moderate doses. The exceptions to this rule are, acute cases affecting important structures,—as severe stomach affections involving gastritic symptoms,—or cases of active or acute disturbance of the heart or pericardium,—or the gouty ophthalmia and iritis,—and the like. Mercury, as eventually debilitating, and a direct cause of morbid sensitiveness, is to be shunned, unless specially indicated, in cases of irregular gout.

The selection and the doses of purgatives, and the degree to which purgation should be carried, must depend on the acute or the chronic nature of the case, and on the amount of derangement, accumulation, or sluggishness, to be dealt with. Croton oil is an excellent purgative in such cases as require to be treated actively, or which are not found to yield to the ordinary purgatives, and in which decided purgation is not contra-indicated; and it is one which we believe to be far too seldom exhibited in cases of irregular gout of active character, attended with derangement and sluggishness of the alvine secretions. It may be given in doses as small as a twelfth

of a minim with much certainty of effect, when no more may prudently be administered. It may be given alone; or it bears combination with other, especially the resinous purgatives, exceedingly well. Saline purgatives can seldom be used without disadvantage in these cases, unless in small and inefficient doses, or when the case is chronic, and the stomach so free from irritability as to enable them to be taken largely diluted,—say, dissolved in a pint of cold or tepid water: in this way they are often of service. It is on this principle, that many of the saline mineral waters are useful in such cases. A very convenient and agreeable form for the exhibition of saline purgatives is to have a drachm or more of Rochelle salts, to which a moderate dose of sesquicarbonate of soda—say, fifteen grains—is added, dissolved in a pint of tepid water, to be taken in two doses before breakfast, twenty minutes or half an hour intervening between the doses, and the person walking, weather and strength permitting, half an hour or an hour afterwards. To this a few grains of sulphate of iron may be added if required. Or a good form is half a drachm to two drachms of Epsom salts, to which twenty minims or more of diluted sulphuric acid may be added, dissolved in a pint of cold or tepid water, and taken in the same way, and with the same exercise. It is, of course, to the chronic, or the less active cases, that these are exclusively applicable. Castor oil is an excellent aperient in many cases of irregular gout, and one which would be much more given if it were less

offensive to the palates of most people. It is so mild, so little irritating, so certain in its effects, and so manageable by adding to or diminishing the dose, that the difficulty of persuading people to persevere in its use, when steady or mild purgation is required, is often the only objection to it. Many people find that they can take it with less discomfort mixed with warmed milk than in any other way. Any subsequent nausea may often be prevented by mixing two or more drops of cajeput oil with the dose. The resinous purgatives are, of course, necessary in most of these cases. The only fear is that they may, because conveniently taken in the form of pills, be too much given, or too exclusively trusted to. Compound decoction of aloës is an admirable form of purgative; one that proves less irritating than most, and less exhausting than many, of the aperient medicines. It is usually better given in a little cold or tepid water, with or without the addition of fluid magnesia, or ponderous, or simple, or carbonate of magnesia, as may be indicated.

The exhibition of colchicum, in irregular gout, requires much care and judgment; and perhaps it would be well to set down, as a general rule, that it should never be given unless when too strongly and clearly indicated to be justifiably withheld,—as when the irregular gouty action has appeared in a delicate, sensitive, and easily disorganised tissue—as the iris or conjunctiva, or in a vital organ, as the heart. In these cases,—and in some severe forms of gastric disturbance,—and in some acute affec-

tions of the nerves, connected with irregular gout, —colchicum must be given, and sometimes given boldly. But these are comparatively rare forms of irregular gout; and there are few other cases of this kind of gout, in which colchicum can be given without producing eventual mischief, by rendering the disease more fixedly irregular, and lessening the chance of the supervention of regular gout. It should be remembered, that, in confirmed gout cases, irregular gout often precedes the regular attack of the disease; the former lasting sometimes for a few days, and sometimes for weeks. In such cases as these, the circumstances that would justify the exhibition of colchicum, or of any medicine that might check the regular development of the disease, ought to be indeed strong, and the case otherwise intractable.

The treatment of complicated gout must, of course, differ much,—varying with the nature, degree, and stage, of the disease which is co-existent with the gouty condition. In some cases, the disease thus mixed up with gout is so important in character, or severe in degree, as to become the paramount consideration; the gouty condition becoming of second-rate importance, and influencing very little the treatment required. Yet, even in such cases, an acquaintance with the nature of gout will so far bear upon the treatment of the disease with which it is complicated, as to make the practice as cautious as circumstances will permit, and probably less active than might otherwise be thought

expedient. The gouty system will seldom bear well, much direct and sudden depletion, by general or even by local loss of blood,—although this latter is, of course, much less objectionable; and therefore the lancet must be used discreetly and cautiously,—leeches or cupping being preferred, when the case is not very urgent or severe. On the same principle, the use of mercurials and other powerful means of lowering the system, should be resorted to with peculiar discretion.

By far the most important, and not an uncommon complication of gout, is disordered action of the brain, or its membranes, resulting, probably, in apoplexy or paralysis. It need only be said in a work on gout, that, supposing the symptoms to be less urgent in degree and in character, counter-irritation is often of infinite value in these cases,—and, perhaps, of more value than in the other complications of head-affection. Counter-irritation is usually well borne, and may be advisedly kept up for a long time; always supposing that the habit is not in a peculiarly unhealthy or morbidly sensitive state; and that the risk of erysipelatous inflammation is not wantonly incurred. In these cases too, it must be remembered, that there is a constitutional irritant of long standing, disturbing the system,—and that consequently the remedies required for the relief of the head-affection, should be more or less continued for some considerable time longer, than might otherwise be thought necessary, that this constitutional irritant may be counter-

acted. It is probable, that the complication of head-affection with gout, may be traced to the disturbing influence exercised by gout upon the action of the heart, and the derangement of the vessels of the brain be consequent upon this. Cupping, mercurials, with or without colchicum, and, perhaps, with moderate doses of croton oil, will generally be found to be the most important of the means to be made use of. In cases of heart-affection, digitalis, with colchicum, and aperients, or diaphoretics, and such general or local bleeding as may be indicated, are the more important means of relief; to which mercury may be added, as generally an important auxiliary, that cannot be safely dispensed with. In gastric and liver cases, local bleeding, followed by counter-irritation and mercury, will suggest themselves as the remedies of most importance. But these are so many questions of general principles; and the treatment is too little modified by the gouty condition, to make it necessary to enter into their consideration.

It need not be added, that any tendency to gouty development in such cases as these, should be hailed as gratifying in proportion to its degree, and encouraged in every possible way. It may be said, in concluding these general remarks on this very wide and extensive question, that complicated gout, or those cases of non-gouty disease which may occur in the gouty habit of body, and be more or less complicated with gouty inflammation, are apt to be characterised by a

greater degree of irritability, than is common to those diseases, or disordered states, when unmixed with gout, or uninfluenced by the gouty condition; and that they usually bear and require narcotics, to a greater degree, and for less strong indications, than they otherwise bear or require them.

CHAPTER VII.

TREATMENT AND MANAGEMENT OF THE GOUTY HABIT
OF BODY.

THE treatment, and general management of the system, between the paroxysms of gout, is little, if at all, less important, than the treatment of the paroxysm; and upon this must greatly depend the intervals between the paroxysms, and the nature of the paroxysm when it supervenes. There can be little doubt, that in most cases of early gout, by care and attention, the paroxysm of the disease may be rendered of rarer occurrence, and the disease prevented from degenerating into chronic, or into irregular gout.

To effect these great purposes, attention must be given to the diet, and all the habits and circumstances of life, that bear upon and influence the general health. If, as we believe, gout essentially depends upon an accumulation of nitrogenised and carbonised products,—which accumulation depends, in its turn, upon their inordinate supply in the form of food, or their deficient expenditure by a proportionate supply of oxygen, for the elimination

of the one, and the combustion of the other,—it follows, that the treatment of the gouty habit resolves itself into the main particulars of diet, air, state of surface, exercise, sleep, climate, and change of air. Upon every one of these, a few observations may be made.

The diet should be of simple character, not heating, nor consisting of aliment in a condensed form, but of such as contains only a medium percentage of nitrogen and carbon. It should contain sufficient variety to render it at once sufficiently nutritious, and by no means unnecessarily so: an important end that is only to be obtained by a mixed diet, consisting of so much gelatinous food as will save the organs the expenditure of power which is needful to convert fibrinous aliment into gelatine,—of no more fibrinous aliment, than is necessary to repair the waste of the organs and tissues,—and of sufficient carbonaceous matter to supply the purposes of respiration, at the least expense of organic effort; while, on the other hand, the free and regular expenditure of nerve, muscle, organ, and tissue, should be kept up, by adequate and regular exercise of the several parts,—and by these and such other means, as will promote and secure the full and free supply of oxygen to expended tissues, and of such additional carbon as is required for the uses of the respiratory functions. These purposes are to be accomplished by a diet, the total elements of which are in moderate quantity—adequate to the expenditure, but little, if at all,

more than adequate to it: such as contains no more nitrogen than the waste of the tissues demands, and sufficient carbon to prevent unnecessary waste. To which must be added so much exercise, as will adequately expend a sufficiency of nutriment, and produce as rapid an expenditure of the substance of organs and tissues, as will serve to renovate and keep them in the best possible condition for the full and healthy performance of their duties,—and so pure and free an air for the purposes of respiration,—and so clean a skin,—and so sufficient an exposure of the surface to the air, not only by general ventilation of the dwelling, but by spending a portion of the day in the open air,—as will serve fully to carry off superfluous carbon, to maintain the temperature of the body, and to oxygenate the various tissues as fully and promptly, as may be required for their well-being

The great importance of moderation in the use of animal food is shewn by these observations; inasmuch as animal food necessarily contains a very large proportion of fibrine, albumen, or caseine, into the composition of which nitrogen enters largely,—nitrogen being the element which is essential to make up for the waste of the organs and tissues, and that which is expended in the vital processes and functions. Vegetable food likewise contains these nitrogenised principles, which are found to differ intrinsically very little from the albumen, fibrine, or caseine derived from animal substances; but in vegetable food, they are largely diluted by the

admixture of starch, gum, and sugar, none of which contain any portion of nitrogen; and which are consequently only capable of ministering to the respiratory process, and of no value as food, for the repair of the waste occasioned by the use of the tissues and organs. The greater the amount of such waste caused by much thought, or much muscular exercise, or, in fact, by the used powers of any of the different parts of the body, the more of azotised aliment will be required, because the greater the proportion of the waste and expenditure of the organic tissues. In connection with this, and to counterbalance in some degree the deductions which might otherwise be drawn from it, the habits of the individual, and the congenital constitution of his body, will much modify the action of his several organs in this respect. In some, the waste occasioned by a given amount of exercise is probably much greater, than it is in others; at least in this way only, can the very different qualities and kinds of nourishment required by people, placed apparently under exactly the same circumstances, be explained, or accounted for; and, at all events, there is little doubt, that to keep a man of gouty constitution in sufficient vigour, for the maintenance of the power and the healthiness of the functions, more of nitrogenised aliment is necessary, than is required in most other cases. This extends, as is well known, to the children of gouty people, or the offspring of such families as have notoriously suffered from plethora and its various consequences,

and from mal-assimilation generally ; such children requiring so full a diet, as would not be necessary, and might be decidedly excessive, and so far prejudicial, to other children.

To avoid the drawing of sweeping conclusions from what has been said of nitrogen,—and the necessity for it in the economy to repair waste from the use of the different tissues and organs,—and the moderation in its use which is expedient in such cases as have suffered from a disease unquestionably connected with deficient expenditure,—these last remarks must be borne in mind ; but with these considerations placed fully before us, it may be said, that the proportion of azotised articles of diet made use of should be no more, than experience and watchful observation show to be useful and necessary, to keep up the strength and activity of the individual. And it is not, at all events, impossible, that a knowledge of the sound reason to be given for this advice, may lead to its more implicit and decided adoption, than an *ex-cathedra* declaration, that the use of animal food by gouty people should be careful and moderate.

Gelatine is believed by Liebig, and probably with sufficient grounds, to be incapable of repairing the general waste of the various tissues of the body,—the gelatinous tissues, of course, excepted ; and that its chief use, when taken as food, as in the form of soup or jelly, is to repair at once the waste of the gelatinous tissues, as the cellular tissue, skin, hair, &c., which waste is necessarily always going on in some degree,

—and this without making it necessary, that the blood should have to be so much altered in composition and character as to form gelatine, which, if no gelatinous nourishment is taken, must be the case,—and, of course, at considerable expense to the organs of ultimate assimilation, by which blood is made into the various fabrics of the body. To save the assimilating powers of the system as much as possible, and so far to diminish the risk of their duties being done imperfectly, is necessarily a great consideration in the treatment of the gouty habit; and, therefore, a small portion of gelatine, or of certain fish which abound in gelatine, is probably very usefully taken as part of the diet, especially if the probable amount of gelatinous tissue commonly expended by the system be kept in mind, and a moderate use of such viands be alone indulged in.

Fat, and oleaginous substances of all kinds, are destitute of nitrogen,—and as such, might be considered to be desirable, as articles of diet for gouty people; but experience contradicts this, and the larger proportion of carbon contained in it, and the general difficulty of digesting it, unless used very sparingly, and largely mixed with other articles of food, forbid its use in any but small quantities. Its tendency, supposing the difficulty of its assimilation not to be a primary and evident objection to it, is to surcharge the blood, and consequently the liver, with carbon; and thus to derange the system generally, and produce great and important dis-

ordered action; to prevent which, an immense amount of labour would be necessary to effect the combustion, and secure the getting rid, of so much carbon. The necessarily larger quantity of carbon expended in cold weather, to keep up the temperature of the body, renders fat a safer article of diet in winter than summer, and accounts for the use and necessity there is for the consumption of blubber and train-oil by the Esquimaux, and other inhabitants of the frozen latitudes.

The same observations, as far as regards the risk of deranging the organs of primary digestion, apply to sugar, which is one of the non-azotised principles,—but are little applicable to starch or gum, which are equally destitute of nitrogen. Sugar could not be taken in large quantities, and constitute a relatively important article of diet, without deranging the stomach and bowels, and interfering with the digestive process,—however palatably and usefully it may be taken in small quantities, and mixed with the other articles of food. In cases, however, of gastric disturbance, or even of the lesser signs of dyspepsia attendant on gout, the tendency lastly ascribed to sugar, to derange the functions of the stomach, should either make its use be forbidden, or at least cause it to be used with considerable care, and in very small quantities, as long as the dyspeptic condition continues to be an important feature of the case, or a main consideration in its treatment.

Starch, however, appears to be the most important

of the non-azotised articles of diet; the one which supplies the carbon required for respiration (through the instrumentality of the liver, and by being, in the first instance, acted upon by it) without direct expense to the substance of organs and tissues, and without involving corresponding waste of the system itself. If not thus furnished by some non-azotised article of food, the carbon necessary for respiration (which is needful for maintenance of the body's temperature, produced by the conversion of carbon into carbonic acid) must be derived from the azotised articles of food, or from the waste of the tissues themselves; the one involving a deposition of nitrogen, the other an elimination of it, which must require a considerable amount of exercise in order to remove such redundancy, or, failing such an amount of exercise, risk the supervention of local or general irritation, and consequent morbid action. For the consumption of this nitrogen, thus set at liberty by using the carbon contained in the azotised articles of diet, or the carbon contained in the azotised tissues of the body, for the purposes of respiration, more expenditure must necessarily be effected, and this must be done by exercise. To save the necessity for spending time largely in using the muscles, we are furnished with non-azotised articles of food; and the less we use our muscles, the more large a proportion of our diet must these constitute,—and, other things being equal, the less of the azotised principles should we, or can we, without risk, con-

sume. Hence, it is only people who spend their entire days in exertion, as in hunting, that can live, almost exclusively, upon nitrogenised substances, and of whose diet non-azotised substances must not constitute a large proportion. Of the non-azotised articles of food, starch, gum, and sugar are the principal vegetable forms; and these enter very largely into the composition of arrow-root, sago, tapioca, potato, and, — although less considerably, yet largely, into that of the grain of rice, wheat, oat, barley, rye, succulent and leguminous vegetables, &c. In this case, again, while the principle is kept in mind, and the important consideration remembered, that a large amount of non-azotised materials should be used as food, by those who lead more or less sedentary lives, or suffer from the diseases which more or less result from sedentary habits, or diseases of similar character to these; yet the form in which these articles are used, or the specific articles that are made use of for this purpose, should be such, as will be most easily digested, or be least likely to call upon the system for much effort to effect their assimilation. Thus, some people may be properly confined to wheaten bread or rice,—others may be allowed to eat potatoes or oatmeal,—others need scarcely be restricted at all, unless as regards quantity, neither cabbage, peas, beans, carrots, nor turnips, seeming to disagree with their stomachs. In general, however, the gouty habit involves more or less of dyspeptic tendency,—is characterised by easily deranged,

although otherwise probably active powers of digestion ; and, in such cases, there must be more or less of restriction, as to the kind of non-azotised alimentary matters made use of, as well as respecting the quantity taken ; and, therefore, in most instances the vegetable substances more usually found to disagree with the assimilating organs, are, at least, to be noted, and their use discontinued when suspicion is strengthened into the certainty of their being difficult of digestion. Of these, cabbages, peas, and beans are, probably, the most likely to produce derangement ; then French beans, cauliflower, and potatoes ; and wheat, in the form of leavened, or even less so, in the form of unleavened bread (biscuit), rice, and the more strictly farinaceous substances, arrow-root, sago, &c., are very rarely found to aggravate, and still less likely to give rise to, dyspeptic symptoms. This is peculiarly important in gout, because the consumption of the non-azotised principles in the food is of the greatest importance in diminishing the predisposing cause of the disease, and because the system has not only less chance of having a redundant proportion of nitrogen to furnish a morbid irritant, but its respiratory process is adequately ministered to with less expense to the system, than would be the case if the carbon had to be derived from the decomposition of the blood, or of the tissues from which the blood had been formed, diminishing, as this necessarily does, the risk of mal-assimilation.

While, however, the importance of making the

non-azotised principles constitute a large proportion of the diet of gouty people is to be constantly remembered, and the relative ease with which the stomach, &c., can digest the different forms in which they are severally presented to us, must not be lost sight of, it must be remembered, that there is some risk of limiting too much the kinds of food which are to be eaten; and that the greater the variety of food made use of, other things being equal, the more likely is the system to be kept in health, or restored to it; supposing, of course, that the stomach is able to digest them in a sufficiently short time, and without sensible inconvenience. The effects, for instance, of ripe fruit, and freshly-gathered vegetables, on the economy, if not, perhaps, admitting a satisfactory chemical explanation, are no less true; and much evil has probably been done by needlessly restricting patients to a diet of animal food, bread, and rice, in whom a proportion of potatoes, cabbage, or cauliflower, and of fruit, either boiled, or when perfectly ripe in the raw state, would not only have done no harm, but would have been really useful.

However necessary the non-azotised articles of food are, it is scarcely necessary to say that the azotised articles are no less so,—that nitrogen is the element, on the supply of which depends the restoration of the expenditure of the organs and tissues, of the waste they undergo from wear and tear; and, therefore, while the mixing a considerable proportion of non-azotised food with those articles

which contain nitrogen is advocated, on the principle of providing against the gouty predisposition, by diminishing the labour of the assimilating organs, and at the same time lessening the risk of superabundant nutrition, the necessity of maintaining the system in vigour must be kept in view, and the really feeble condition which the disease involves must not be lost sight of. Under these circumstances, nitrogenised aliment may be too much abstained from; and, on the other hand, the risk of such diet unduly loading the system must be provided against by as much exercise of the muscles, &c., as may be found necessary or expedient; the balance between the supply and the expenditure of nitrogen being maintained, as far as possible,—as upon this must depend the continuance of health and strength, and our strongest hope of maintaining the gouty paroxysms when they do occur, in their acute, and fixedly paroxysmal, and most desirable form. How clearly these considerations show the importance of attending to the health between the gouty paroxysms, and how much the gouty condition, and the progress of the diseased action, must depend on the individual himself. This is one of the most important lessons that can be inculcated upon the gouty, and upon those families who are predisposed to it.

As has been said, animal food contains a larger proportion of nitrogen, because the albumen and the fibrine (compounds of nitrogen) are not diluted, as they are in most vegetable substances, with non-azotised principles. Animal food is, therefore, per-

haps almost entirely convertible into blood, and this into tissues and organs; the exceptions probably being gelatinous substances, which are supposed to be only calculated to restore the gelatinous textures of the body; and fat, which is non-azotised, and probably serves the purpose of respiration, more or less directly through the medium of the liver; this leading to a series of facts which show, that the superabundant fat of the system may, in case of necessity, serve the purpose of respiration, by furnishing the required carbon. As regards animal food, the question of comparative digestibility is, of course, of a degree of importance, hardly second to the question of the chemical influence of the food on the system. Of flesh (principally fibrine) that obtained from the fully grown animal is generally more easily digested, than that from the immature and still growing animal; veal and lamb are, therefore, less easily digested than beef and mutton. Game and poultry are easily digested by most people. Water-fowl—goose, duck, &c., are less easily digested than poultry; long-billed birds, as snipe and woodcock, than partridge or pheasant. Roasted animal food is more easily digested than baked or boiled; probably because in the one case (baking) it is hardened by the elevation of temperature, or more probably because the fat acquires a slight degree of empyreuma, appreciable by most people of delicate palate; and in the other (boiling) because much of the gelatine is separated from the meat, and the fibre is more slowly, and with greater diffi-

culty, rendered soluble by the secretions of the stomach. An apology would be necessary for introducing these details, were they not necessary to a complete view of the treatment of gout, and, perhaps, sometimes apt to be unduly slighted.

As has been said, when speaking of vegetable food, there may be too much restriction as to the kind of animal food allowed. If consisting of articles that are not calculated to disturb the stomach by the difficulty or the slowness of their digestion, or by their being imperfectly assimilated,—and if not inducing the eating an inordinate quantity of food,—variety is decidedly useful, keeping up more certainly the strength of the system, probably calling upon its powers less to adapt the food to its wants, and thus relieving it from a certain amount of work, which, by being left undone, or by being done imperfectly, might lead to derangement.

The probable effect of alcohol on the body, is by permeating the tissues rapidly, to come into very speedy and very general contact, by many and extensive surfaces, with the oxygen of the arterial blood, to combine with it,—giving its carbon to the oxygen, forming carbonic acid,—its hydrogen to the oxygen, forming water; the effect being the disengagement of heat, independently of the alteration of the tissues, and of the conversion of arterial into venous blood upon the union of oxygen with the carbon of the blood, on which the temperature of the body is known to depend. This effect is necessarily connected with increased action, excitement,

and such effects on the nervous system, as alcohol, however taken, is known to produce. Now, of course, the primary effect of alcohol is to interfere with the combination of the tissues, and the carbon of the system generally, with the oxygen received by inspiration, and by so much to diminish waste; the secondary effect is to excite the system, by which the waste is increased; and the third effect is necessarily such an amount of exhaustion, as corresponds, other things being equal, with the amount of excitement that has preceded it. This is very much the effect produced by alcohol on the body,—modified, however, by the form in which it is given, by the state of combination with other vegetable principles in which it is taken, and much modified likewise by the degree to which the system has become accustomed to its use. If the body has, from habit, acquired a custom of being supplied with a certain amount of temperature and stimulus, without expense to the tissues, and without the use of the organs of motion; if the heart and arteries have had their action correspondingly accelerated, the respiration by so much quickened, the nervous system by so much excited, the various processes, among the rest digestion, by so much facilitated in their performance,—the loss of all this must be largely felt; and it may hardly be withheld in many cases without decided injury, even although the obtaining these effects in an illegitimate manner, without exercise of the muscles, and without primary waste of the azotised tissues, may be vir-

tually the cause of derangement in the amount or the regularity of the expenditure of the system, or increase materially the risk of disordered action. But there are undoubtedly cases, in which the use of alcohol, if moderate, and carefully adapted in quantity to the wants of the system, may be beneficial: cases in which the supply of oxygen is probably excessive, or greater than the waste of the tissues is prepared to meet; in which, in fact, sufficient exercise cannot be taken to secure sufficient waste, nor sufficient non-azotised food digested to combine with the oxygen of respiration. If this should not prove to be the correct explanation of the fact, it nevertheless remains true, that there are cases in which some of the forms of alcohol may be used necessarily, and with much benefit. There are many cases, perhaps comprising a majority of the individuals in civilised life, in whom a certain moderate proportion of alcohol does no apparent harm, and, at least for the time, appears to do good. But these do not prove its necessity, and only seem to prove its harmlessness; and we probably want more extensive statistical and numerical proof, before we can say that "teetotalism," or even the using fermented liquors so irregularly as not to habituate the system to their effects, is, or is not, useful to the health of man; their excessive use being admitted, and only too well known, to be injurious. But, as regards the question of gout, there has been, generally, the habit of using alcohol in some form, gradually, but decidedly, produced; it has become

part of the functional requirements of the system, and cannot be withheld without interfering considerably with those requirements, and, by so much, risking derangement and loss of power; and such a step will be attended with more immediate and important consequences, the greater the degree to which they have been used, and the more decidedly the alcohol may have been modified in its effects, by its mode of combination. Thus, although a sudden discontinuance of a habit of drinking brandy-and-water daily may be attended with great immediate depression; yet it is very doubtful if the eventual effect of this discontinuance upon the system and its powers, will be adequate, or nearly adequate, to that of as suddenly leaving off the use of malt liquor or wine. Then there is another practical consideration of little less importance. In the use of malt liquor and of wine,—however much the alcohol contained in them, probably in a state of very intimate combination, may promote the digestion of their vegetable constituents,—yet these must, and do, call upon the assimilating organs for their conversion into the materials of the body, making the question of their use very frequently one of much doubt, and, in many stomach cases, leading us temporarily to substitute alcohol in a purer form, when it might not be advisable to discontinue the use of this powerful stimulus. To leave off the use of wine is, in fact, generally speaking, the most rash and unwise thing a gouty man, who has been long accustomed to its daily

influence, can do. If there are sufficient reasons, which will probably seldom be the case, for leaving off the use of everything containing alcohol, the experiment must be made by slow and almost imperceptible degrees, to be made safely, in gout cases. The blood, the tissues, the nervous system, the general powers and functions, cannot be suddenly or greatly deprived of so energetic and rapidly acting an agent, without risk of immediate loss of strength, and immediate derangement,—and consequently without risk of aggravating the gouty condition, and causing it to degenerate in the character of its manifestations; accordingly, in most such cases, the paroxysms have been found to have degenerated in their character, if not to have ceased to be manifested acutely or actively; and the disease has either ceased to be localised, having become irregular; or if localised, has passed into smouldering or chronic gout. And this risk is believed to be greater, when malt liquor has been the form in which alcohol has been taken, than when it has been used in the form of wine,—and greater in the case of heavy fruity strong wines, than in those of a thinner and weaker quality.

It must not be at all inferred from what has been said, that it is intended to recommend the habitual use of spirits, in preference to that of malt liquor or wine. On the contrary, the use of alcohol, only qualified with water, or very slight vegetable additions, as may be the case in brandy, whiskey, rum, and hollands, is probably directly

injurious in the same proportion as it is so uncombined, and therefore so unmodified in its stimulating effects ; this being compensated only by the lessened difficulty of assimilation, and the less consequent risk of disturbing the digestive process ; and therefore it can only be in such cases, where habit, or the circumstances of the case, render an alcoholic stimulus necessary, and yet the state of the digestive organs renders the assimilation of wine or malt liquor difficult, slow, or imperfect, that spirit, or spirit-and-water, should be taken. In such cases, the purer and older the spirit, the better,—and the more largely the stomach will permit it to be diluted without producing inconvenience, the less will it be likely to do harm ; and it will generally be better that it should be mixed with cold water than warm,—and in cases of stomach irritation or marked dyspepsia, without sugar than with it.

Wine is generally preferable to malt-liquor for habitual use in gouty constitutions. It is more readily assimilated, is more perfectly combined, contains less free mucilage or sugar, and is a more perfect result of fermentation, having a very small proportion, if any, of imperfectly fermented materials. Of course, the older ale or porter is, supposing it to be free from acidity, and the more thin and clear, the less objection is there to its use ; and if not found to disagree with the stomach, or to oppress the system, originating or adding to congestive tendencies, and the greater the amount of the system's expenditure in muscular and other exercise, the less

objectionable will its use be. The India, or bitter beer, that has of late come to be used so much, seems to be decidedly the least objectionable form of malt-liquor for most gouty invalids, and may often be used, and not only without disadvantage, but with positively tonic effect on the digestive organs, when ordinary malt-liquor would be properly and necessarily forbidden. The kind of wine to be preferred will depend very much on the season of the year, and the habits and constitution of the individual; and in some instances it must be regulated exclusively by the peculiarities of the case. The wine should be old, and neither mucilaginous nor sweet, and contain little or no free acid; for, although the use of vegetable acids cannot generate gout, as was once supposed, and although, at times, they may be allowed without disadvantage, and perhaps with benefit; yet there can be no doubt, that in most gout cases, vegetable acids cannot be taken regularly, in any form, without adding to the morbid tendencies of the system. This is not an invariable, but it is a general rule. If acid wines are not contraindicated, and even considered necessary, as in hot weather, and when the individual has scorbutic indications, the pure light Rhine wines are to be preferred. When acid wines are not decidedly indicated, and yet a very small proportion of acid may be thought not unobjectionable, the pure clarets may be tried, and often this has been done with evident relief, after the system has been accustomed to, and kept in a state of feverish irritation, by the highly

branded wines of Spain and Portugal. The question of wine-drinking has been made too much a mere stomach-question, their digestibility being made the exclusive consideration; and thus the strong wines have come to be unduly made use of. Pure wine can rarely be too light in its character; it should be thin, with a slightly, and not strongly, fruity taste, without marked sweetness, as little acid as may be, and as free from added brandy as it can be procured. As has been said, if the stomach be so much deranged as not to be able to digest wine without inconvenience, brandy or whiskey must be substituted for it, for the time; and if able to digest sherry or madeira, and not found to bear the lighter wines, the former must be allowed;—the same remark holding good, if any amount of acid in wines proves troublesome, immediately to the stomach or bowels, or remotely to the gouty irritation. Gout has probably been too much looked upon as being necessarily connected with redundant acid; whereas, it is generally only the paroxysm itself, or the constitutional irritation which attends existing gouty inflammation, that shows this result of much disturbed assimilation; and it perhaps as frequently attends many other forms of febrile or inflammatory disease as gout itself. To drink brandy or any other spirit habitually, and in such quantity as to influence the system to a marked extent, is certainly injurious to every constitution; and to drink brandied wines habitually is only so much less so, as there are in these, other vegetable matters mixed or com-

bined with the alcohol ; and, therefore, although it is not contended that every one should drink the purer and less stimulating wines, or that madeira, or sherry, or port, may not be necessary to some people, whether on account of dyspepsia, or on account of marked and easily increased tendency to the generation of acid, yet it is not to be doubted that in the majority of gout cases, especially the earlier and less fixed cases, the lighter and purer wines will not disagree, unless when the stomach may happen to be deranged, or in very cold and damp weather, and in feeble constitutions, for which the amount of stimulus afforded by them may not be sufficient.

Champagne is not a wine the habitual use of which is to be recommended, inasmuch as it contains free carbonic acid, and other products of imperfect fermentation. The same remark applies to all sparkling wines. The constituents are not in a state of perfect combination ; and perfect combination is the essential distinction between wine, and alcohol-and-water ; and the reason why it is found to be less heating, less directly and transiently stimulating, and more permanent in its effects on the system. No theory yet broached, will explain the difference of effect of alcohol mixed with water, and of pure wine ; no knowledge that we yet possess of the composition of wine, or of the probable mode of action of alcohol on the system, will explain the fact, that wine is so much less directly stimulating, and so much more permanent in its effects.

It nevertheless is so,—and by so much is, in most cases, a more desirable beverage for invalids whose systems require the regular use of a moderate stimulant, than alcohol is, if taken in any other form.

Port wine is in many cases further objectionable, on account of its astringency. In some few instances, this seems, on the other hand, to be its strongest recommendation. These are generally cases of relaxed and feeble character.

The quantity of alcoholic stimulant habitually made use of should be certainly no more, than is sufficient to aid the several powers of the organs in maintaining the vigour of the functions; and whatever is more than this, and so far stimulating as to be followed by depression, is in all cases directly injurious, and eventually destructive to health.

The free use of diluents, as a means of influencing the gouty habit, by increasing the action of the kidneys, the skin, and other emunctories of nitrogen, has been much, and very unwisely, neglected. One or two half-pints of cold water, taken before breakfast, or two or three hours after any of the meals, using exercise afterwards to promote its rapid absorption from the stomach, often, and very obviously, promotes the action of the kidneys, &c., with benefit to the digestive powers, the general tone, and the expenditure of the system, and with advantage to the gouty condition. I must guard myself against the possibility of being supposed to advocate, by making this suggestion, what

is impudently and facetiously called “the cold water cure.” So far from doing so, I cannot too strongly state my conviction, that no gouty person should bathe in water that is below the temperature of 70 degrees,—that frequent and large ablutions and bathings in water of any temperature must necessarily either relax the skin, and so debilitate its vessels, or risk the repression of gouty developments, and consequently risk the supervention of disease of the heart, or of some of the great viscera. That this has been the effect of “the cold water cure,” medical men need not now be told; nor that it is a mode of treatment that is fearfully powerful in its effects, and very uncertain in its results.

The importance of exercise in the prevention of gout, long known and admitted, has, perhaps, only lately been understood and shown to be explicable. The direct effect of exercise is to expend the substance of the tissues made use of,—of course especially the muscular tissue; to cause a greater degree of waste; to destroy a given amount of the muscular substance, which is returned to the circulation, and eventually excreted, chiefly, of course, by the kidneys. A principal ingredient in the matters thus expended is necessarily nitrogen; the element upon the excessive amount of which in the system generally, gout and its allied diseases probably depend; and, consequently, muscular exercise affords a direct means of lessening gouty predisposition. The more recent the gout, the more entirely

and rapidly the attack may have passed away, the more unqualified may be the amount of good to be reasonably expected from exercise, and the greater the degree to which it may be used. On the other hand, in older gout—in gout that has been less acute in its character, less regular in its course, and which has left a degree, however slight, of local consequence behind it, whether amounting to irritation, or even to a less degree of morbid sensibility of the parts which have been the seats of the attack—the less sanguine must be our expectations of the good to be derived from exercise, and especially the more cautiously must it be resorted to. Under these circumstances, there is much risk of aggravating local irritation; and this is often in a great degree masked, giving few indications of its existence, and imperfectly signifying its extent; and the question of exercise must be made of importance, as to when, or to what degree, it is to be had recourse to. It is difficult to convey to a mind not accustomed to gout cases, the risk of bringing on, or increasing, irritation of parts that have been more than once, and at no long past time, affected with gouty inflammation; and how readily this is often done by using the parts in any but the most gentle, and seemingly trifling degree. Exercise must in such cases be resumed most carefully, and gradually increased, with every watchfulness. The early accession of a gouty paroxysm, however slight its degree, after a fit that has not been improperly interfered with, or checked without sufficient rea-

son, is always, and on every account, too undesirable to be a justifiable matter of unnecessary risk. The tissues are then relaxed and debilitated by the recent attack, the system in general has lost much of its tone, and the relapse under such circumstances almost always involves a fit that is not acute, nor adequately developed, that lingers, and leaves behind it troublesome, if not irreparable injury, to the structure of the parts affected.

Carriage exercise, if the weather be mild and dry, is the most desirable form of exercise under such circumstances, enabling the limb to be supported, neither used, pressed upon, nor left dependent. In excitable systems, with morbid sensibility of the recently affected structures, hanging down the foot is sometimes sufficient to reproduce the gouty inflammation. Carriage exercise may, of course, be taken sooner than any other form of exercise might be thought expedient, giving the patient the earlier benefit of change of air, and his mind the more early relief of change of scene. As the system loses its irritability, and the seats of attack their sensitiveness and atonic condition, gentle walking is to be gradually ventured on; and to this, longer walking and quicker walking,—to this, horse exercise,—and to this, such gymnastic exercise as may call into use the muscles not necessarily or greatly made use of in walking or riding,—may, one by one, and from less to more, be added. Sydenham thought highly of horse exercise; and it is important on many accounts. The mental

and physical effects of this kind of exercise are almost equally great. The excitement, the rapid change of air, the action of the abdominal muscles involved in it, the consequent effect on the liver and respiration, singly and relatively, make horse exercise peculiar in its effects; and no amount of walking, or of gymnastic exercises, can possibly serve as an efficient substitute for it.

But, highly as horse exercise should be thought of, among the curative measures to be resorted to for gout cases, during the intervals between the attacks; yet it is only secondary to walking exercise, because it uses fewer muscles, and uses them less efficiently; and to trust to either horse exercise or walking, in cases which bear the exercise of the muscles without local or general irritation, is wrong, because neither of these kinds of exercise demands the action of all the moving apparatus. Supposing the walking and the riding to be taken at the discretion of the individual, and without the spur of necessity, they will hardly ever be used to a sufficient extent, to expend fully and adequately the nitrogenised tissues. It must be considered, that such an amount of forced expenditure as might be sufficient to keep the system in health, if uninfluenced by previous disordered action, or unmodified by hereditary bias, will probably not be enough for the maintenance of health when disordered action has already shown itself, or the system is under the influence of hereditary predisposition. It is believed to be an unquestionable fact, that more

exercise must be taken, a stricter diet adopted, and a harder regimen, in every way, be used, to remove plethora, with its many and serious consequences, than would have been requisite to prevent its occurrence in the first instance; and those are really the hopeless cases, in which this fact is not known, or the self-control to make it acted up to is not possessed, or when the local injury is already too great, or the excitability of the system too considerable, to enable the amount of exercise to be taken, that is necessary to produce this large and regular expenditure of the nitrogenised products. This expenditure must, for obvious reasons, be regular; or more harm than good will probably be done by it. If the system is habituated to a large amount of expenditure by means of muscular exercise, the activity of the nutritive functions will be proportionably great; and if the diet is so regulated, as to furnish no more new materials than are needful to maintain the health and strength, or is even slightly below this, the balance between the expenditure and the supply may be readily maintained; but it is obvious how easily the balance may be destroyed, by lessening the waste of the system, by neglect of the exercise by which the system is relieved from its superfluities, or by which the expenditure to which it has become accustomed, and for which it has learned to assimilate a certain amount of nutriment for the ingesta, is secured.

The exercise taken by those who have had only

early gout is, in most cases, quite inadequate to influence their systems enough, to make it a means of cure, or even a means of materially lessening the tendency to the disease; the exercise is usually insufficient in kind and degree; and to be of real use, it should be tantamount to the labour undergone daily by working men. Such an amount of exercise as this, and no less, made use of daily, with as much regularity as if the day's bread depended upon it, is needful, if exercise is to be trusted to as a cure for gout. It is doubtful if the cure of gout be not almost as well worth the labour, as the wages of the workman, and the necessities that they enable him to purchase. Gout, and its attendant evils, are neither so trifling, nor so few, as to make the question one of an importance second even to the providing for the daily necessities of life; unless indeed a life crippled and painful, probably much shortened, and certainly curtailed in its enjoyments, its capabilities, and its usefulness, be thought so decidedly preferable to an earlier death. To enable so much muscular exercise to be taken, the spur of pressing necessity being wanting, and the habits of a life-time being probably opposed to it, it will be useful to vary the kind of exercise as much as possible; while, as has been intimated, this will have the farther good effect of calling a larger number of muscles into action, and, in this way, of making the waste as general as possible. Exercise of the arms and of the voice are important in these respects. The use of dumb-bells, or of clubs of heavy wood,

held in the hands by one of their extremities, and swung round and over the head, and of the voice in reading aloud or in singing, where this last is not attended with undue mental excitement, or either of these chest-exercises do not materially disturb the heart's action, will be found only second to walking and to horse-exercise in their good effects.

The spending as much time out of doors, as is consistent with the climate, and the powers of the individual, is of great importance in lessening the gouty predisposition; and, of course, the drier the air, the more genial and uniform the temperature, the more is this to be insisted upon, and the farther is the principle to be carried out. The effect of the direct rays of the sun, if not powerfully hot, and therefore capable of producing derangement in the economy, is, unquestionably, most beneficial; mysterious as is their *modus operandi*. We must refer the question, in all probability, to the agency of electricity. Dry and warm air seems to abstract less electricity from the system, than cold and damp air; and the effect of solar light is likewise probably electrical. Regular exposure to the air lessens materially the susceptibility of the surface to be influenced, to the degree of aggravating morbid tendencies, by atmospheric changes, either as to dryness, or as to temperature; and is so much the more useful in its effects on the gouty habit. But it is by strict attention to clothing, adapting it duly to the climate, and the habit, and other individual circumstances of the case, that regular exposure

every day to the open air is rendered safe and prudent. In such a climate as that of England, the wearing some decidedly bad conductor of heat next the skin, is of much importance, as silk, flannel, or cotton, especially the first; of which a waistcoat and drawers, to clothe the body completely from the neck to the knees, should be worn throughout the year, during the day-time. To wear this when in bed is needless, and might well prove to be relaxing. Silk has the advantage of being a bad conductor of electricity, as well as of heat. As the keeping the vessels of the surface in a state of uniformly vigorous action, and avoiding as far as may be the risk of chill, is of obvious and great importance in gout-cases, the clothes, generally, should be such as will adequately confine the temperature of the surface, without relaxing it; and as the extreme and dependent parts of the body are those most likely to suffer, both from what may, perhaps, be the idiosyncrasy of the complaint, and from the more languid circulation, and from the direct contact with cold and wet, the stockings should be woollen, or of thick silk, and the shoes should have thick soles, with an inner sole of cork; and they should be so carefully and well made, as to run no risk of pressing unduly on any part of the foot. As regards the condition of the surface, the use of friction with the flesh-brush, or hair-gloves and hair-belt, once, or even twice a day, will be found to be highly beneficial. It is said, that one of the most eminent

physicians of the day, objects, in many cases, to the use of friction to the surface, from an impression, that it may unwisely debilitate the system to reproduce the secretions, which are, in part, thrown out to protect it from the cold. This objection, however applicable to feeble and strumous cases, can seldom be applicable to gout; in which the object is to promote expenditure, especially the expenditure of nitrogenised products, of which the skin is an important emunctory. To promote the tone of the surface, sponging the skin daily, with tepid or cold salt and water,—or a shower-bath, taken every other day, of salt and water, at the temperature of 75 to 80 degrees,—or a plunge or slipper-bath of water at about 80 degrees, every third day, confining the immersion to five or ten minutes, or less,—will each, or all, be useful. Cold bathing, unless in the sea, and then only under peculiar circumstances, is a doubtful measure in gouty constitutions. It is seldom advisable to produce a great and sudden shock, either to the nervous system, or to the circulation, by this, or any other means; and still less advisable to risk the derangement that must ensue, if the re-action should not be immediate, and of decided character.

The vast importance of early hours,—of taking as much sleep as will restore the balance between the restoring and the expending organs, and no more,—can hardly be too much dwelt upon; and these are questions, which are apt to be little, if at all, considered by the gouty, whose nervous systems are

kept by their own irregularities, as to eating, drinking, exercise of head, or of body, in such a state of unceasing change of circumstances, that four hours' sleep may be the largest amount obtainable in the twenty-four hours at one time, and nine or ten hours may be so expended at another time. The habit of regularity in the intellectual pursuits, in the exercise taken, in the food and drink used, and in the hours of going to bed and rising from it, will do much towards rendering the amount of sleep required, and to be commanded, regular and moderate ; and this, in its turn, will have much effect in regulating the nervous system, and preserving steadily that due balance of the supply and the expenditure of the system, which is so necessary to its health, and does so much in lessening morbid predisposition of all kinds. Excessive sleep adds to plethoric tendencies by diminishing the expenditure of the system, but, at the same time, it seriously diminishes the vascular energies, and oppresses the powers of the nervous system,—the congestive state consequent upon which, renders the organs of excretion sluggish in their action ; and thus, too much sleep becomes an important predisposing cause of disease, and a powerful means of aggravating existing morbid tendencies. To go to bed early is a means of avoiding the undue expenditure of the nervous power, and the excitement, and the resulting exhaustion, which such expenditure produces,—and a heavy, protracted, and then disturbed or broken, and, perhaps, alto-

gether excessive sleep, by which such expenditure is, in some degree, made up for,—and the general disturbance of the nervous and vascular systems, which excessive sleep must entail. Regular hours for sleep, is a matter of even still more importance; and habit will soon render them easy, and improved health be usually their large reward.

Climate is of great importance in attempting the radical cure, or material relief, of the gouty condition of body. A dry, mild air, of equable temperature, has a most salutary effect on the gouty habit. When the disease is recent, and neither confirmed, nor supposed to be the result of strong predisposition, the air of the coast, at least occasionally, is of much use; otherwise, for the general residence of gouty people,—and in confirmed cases, perhaps, for their exclusive residence, unless it might be immediately after a paroxysm,—an inland situation is to be preferred. The soil of the district should be dry, and of sand or limestone,—especially, perhaps, the latter. The air of the hills, unless in the summer months, or soon after a paroxysm, or in cases of atonic gout, is to be avoided,—and perhaps equally that of the valleys. A flat, dry country is the best for the general residence of the gouty. The effect of climate on gout is well shown, in the increased tendency to a paroxysm in the variable weather, and varying temperature, of spring and autumn,—and, perhaps, in the greater amount of gout, in this land of fogs and showers, than is found to exist in the other countries of

Europe. The beef and beer, however, and stronger wines, that are used in this country, must be permitted to bear their share of blame in this matter. Where circumstances permit it to be done, much important effect may be worked on the gouty habit by such judicious removal from place to place, for a year or two, as will diminish largely the chance of exposure to great atmospherical vicissitudes, or to the extremes of cold and damp; and, in extreme cases of confirmed and long-standing gout, the decided removal to an intertropical climate, may often do more good than any other means that can be had recourse to. But change of air, frequent change of air—independently of that involved in passing from one country to another, to make the year a perpetual summer—as a means of equalising the circulation, lessening congestion, and keeping the capillaries in tone, is of first-rate importance, during the intervals of the gouty paroxysms; and in connection with attention to the diet, &c., &c., might and would do much in lessening the gouty predisposition.

CHAPTER VIII.

MEANS OF PREVENTING GOUT.

THE means of preventing gout are, perhaps, sufficiently obvious, or may be readily deduced, from the foregoing chapters of this book. If gout be a disease based on plethora,—if it consist essentially in a redundance of nitrogenised products in the system,—if it involve the degeneration of certain of these into matters foreign to the healthy system, and all but identical with those into which the nitrogenised matters are converted, when no longer required by the system, and about to be discharged from it,—it follows, that to prevent gout, the chances of accumulation of the nitrogenised products in the system must be avoided. That plethora should induce irregular action of the various organs of secretion and excretion,—that it should derange the nervous energies,—that it should interfere with the circulation generally, and produce local and general congestion,—that it should disturb and interfere with the great and complicated processes by which food is converted into the several tissues of the body,—that it should interfere with

and retard the amount of the waste of tissues no longer wanted, and that would, in a state of health, be returned to the circulation preparatory to its discharge from the system,—that it should favour its retention, and its conversion into forms which, however naturally and properly produced in the kidneys, or elsewhere, immediately before its discharge from the body, must be abnormal and morbid when found elsewhere and retained in the system,—that all this may be a result of plethora, it is not difficult to understand; and this certainly appears to be gout. But whether this be a tenable hypothesis or not, the connection between gout and plethora, and the effect of diminishing plethora on the prevention and cure of gout, are facts which cannot be contradicted, and that are all-important. Gout may be prevented,—and perhaps in all cases, however strong the predisposing cause, however apparently certain the occurrence of the disease at some time or other, from the amount of hereditary influence, and the resulting indications of plethoric and congestive and mal-assimilating tendency,—yet, probably in all cases, gout may be prevented,—by a judiciously managed childhood, and a carefully regulated after-life; and the object is ultimate as well as immediate; it bears upon the well-being of the race, as well as of the individual; for gout is never a solitary evil; it has, co-existent with it, or allied to it, other forms of strumous or cachectic disease; any one or more forms of which may be transmitted by a gouty parent to his children, lessening the probabilities that

the race will be continued, and the chances of the health and usefulness of the generation to be born. But the means must be strong, and of decided character, in proportion as the predisposition to be overcome is strong and decided ; and must involve all the circumstances of the physical education, almost from infancy upwards. The infant should be supported on the milk of a young and healthy mother,—its surface duly protected from the cold, its skin kept in a state of healthy action and in tone, by regular ablutions, and due but careful exposure to the air,—and the digestive organs attended to, by not allowing the amount of nourishment to be immoderate, and by active exercise in the nurse's arms. Even at this time of life, the tendency to plethora, and consequent mal-assimilation, may be added to or lessened. And afterwards, the diet should be simple and nourishing, but not excessive, nor calculated to disturb the digestive organs. The state of the stomach and the skin must be made matters of constant attention ; exercise, daily exposure to the air, and frequent change of air, so primarily important to children, and so palpably useful to them ; careful ablutions, and the use of a bath two or three times a week ; the greatest regularity in the periods for sleeping and for taking the meals ; the strict avoidance of stimulants of all kinds, including aromatics, unless specially indicated by casual indisposition ; the regular use of salt in moderation ; the avoiding butter and sugar, as far as they might tend to pamper appetite, and not, of course, to the

degree of making the lives of children a series of daily penances; the restricting the diet to non-azotised articles, as far as is found to be consistent with maintaining the strength, making bread, potatoes, rice, and the like, the chief articles of food, and using animal food only so far as watchful attention shows its necessity to support the expenditure of the system; avoiding an early use of the faculties of mind, and allowing the use and exercise of the faculties in the school-duties to be gradually and cautiously commenced, carried on without forcing, and therefore without robbing the organs of the nervous power they need during the important years of growth, and especially in the earlier years of growth; are so many matters of primary importance, in counteracting the predisposition to gout and other diseases of plethoric origin. And then, as boyhood and youth advance, these things must continue to be carefully attended to, habits of temperance and self-control must be sedulously formed and cultivated, the object stated, and its importance set forth; and all be done that a careful diet can do, consisting chiefly of non-azotised articles of food, or of articles in which the azotised are diluted with the non-azotised, as bread in all its forms, plain simple farinaceous puddings, as rice, sago, tapioca, bread, or batter puddings, or plain fruit puddings or pies,—or potatoes and other easily digested vegetables, as cauliflower, brocoli, spinach, young cabbage, French beans, sea-kale,—celery, lettuce, and other salads,—such fruits, when perfectly ripe, as gooseberries,

strawberries, currants, grapes, oranges,—in truth, making the variety of articles eaten so great, as to remove, as far as possible, the sense of restriction, and yet make the necessity for the use of animal food be as little as possible, confining its use to the principal meal of the day, and then always causing it to be eaten to a certain degree, but limiting that degree to the evident necessities of the system. If the views of Liebig be found to be correct, the use of gelatinous food will be valuable in gout cases, and in cases likely to become gouty: supposing, that gelatine is not convertible into tissue, the gelatinous tissue alone excepted; and that, therefore, fish, jellies, and soups, might constitute advisably a considerable proportion of the diet of people liable to plethora in any of its forms,—lessening the apparent, if not the real necessity for using animal food in other forms, which are, at all events, more directly convertible into tissue. During all these years, unless they be imperatively called for by existing ailment, or cachexia, the use of all fermented liquors would be judiciously avoided, as only tending to add to the predisposition, and being virtually needless to the well-doing of the system. The air of the district selected for the residence should be pure, and if within reach of the sea-breeze so much the better; or, failing this, a dry mountain air should be preferred. The clothing should be regulated carefully, and be decidedly warm. All the habits of eating, drinking, sleep, and study, should be regular—it is a great secret

of health, as well as usefulness, in the after-life. It might seem folly, to talk of muscular exercise in the case of boys, who are hardly ever at rest, and who love movement as if for its own sake; but gymnastic exercises, and running and shouting at proper times, should be encouraged, and at all events should not be repressed, as so many means of giving strength to the organs, of insuring the rapid waste of the superfluities, and their quick expenditure,—and, therefore, of producing the tone, and the healthy action, and the sufficient waste, which are the best guarantees that plethora and its evils will be efficiently resisted afterwards,—and at least that they have not, thus far, been allowed to make encroachments on the functions of the body. The use of a tepid or cold bath twice a week, if possible of sea-water, or of some alkaline mineral water, might probably be advantageous. And then, as boyhood passes into youth, and this into manhood, the same care must be continued, the regular habits constantly cultivated, the hours of sleep defined, and varying little; probably allowing more time for sleep in winter than in summer, because the expenditure of the system is then necessarily greater; the diet carefully regulated, according to the evident wants and expenditure of the system; the more highly azotised articles of food being used with peculiar moderation, and once only every day; the bulk of the aliment consisting of the non-azotised articles of diet, or of those in which the nitrogen is largely diluted; the

use of beer, ale, wine, and spirits being discouraged, and not allowed to become habitual, unless evidently indicated by urgent, and not otherwise to be corrected, debility; and this under such circumstances, will be found to be so rarely the case, as to interfere but little with the general rule, that the children of gouty people should be virtually teetotallers. Add to these important particulars, that the faculties of the mind should be used regularly; and this is far more useful, far more likely to produce intellectual power and eminence, than occasional fits of the hardest and closest study, alternated with mental inactivity; that a given amount of muscular exercise be taken daily in the open air, and that it consist, when this is possible, of both riding and walking exercise; that the surface of the body be rubbed and sponged with salt and water daily; that the clothing be adequate in all particulars to maintain the temperature of the surface, and retain the electricity of the system; and the strong probability will be, that the individual will be free from gout throughout his life; or if the hereditary tendency be too powerful to be counteracted in a single generation, that it will be of mild and manageable character; and that the same care in the case of the second generation will remove it altogether from the race; and not only remove gout, but remove its allied diseases, and free the future generations from the taint of cachexia in all its forms. The sacrifices asked for the attainment of an end so great, are anything but large: the diet

may be various and grateful, and such as might content a gourmand as to its character, if not as to its quantity; and a life carefully regulated, made up of the systematic and equable use of the faculties of mind and body, must, if taken as a whole, be the happiest, as it must be the most useful and healthy life.

THE END.

